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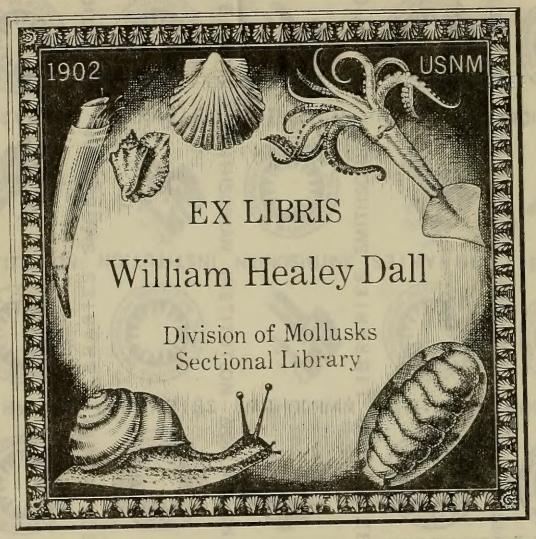


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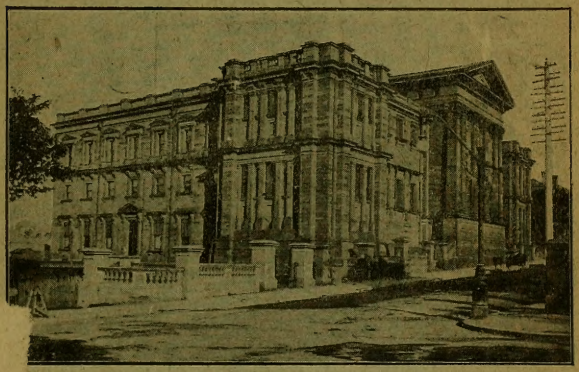
**Vol. XIII., No. 6.**



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**CHARLES ANDERSON, M.A., D.Sc.,**

DIRECTOR.

SYDNEY, SEPTEMBER 30TH, 1922.

Vale & Pearson Ltd., Printers, 2 Castlereagh Street, Sydney.

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# A REVISION OF THE AUSTRALIAN *TURRIDÆ*.

BY

CHARLES HEDLEY.

(Plates xlii.-lvi.)

The marine gasteropods embraced in the family *Turridæ* (formerly *Pleurotomidæ*) are considered by those who meddle with them to be more perplexing than any other molluscan family. This is because that family embraces a bewildering wealth of recent and fossil species, frequently small in size, variable or indistinct in feature, and from depths difficult of access. For the most part the species are expressed by a poverty of individuals. This small proportion of individuals to a species is the general rule with carnivora, which by ecological harmony must be less numerous in individuals than the phytophaga. But the consequent scarcity of specimens hinders that exchange and comparison of material between students, so necessary for the correction of error and advance of knowledge. The range of Turrid species in space appears to be rather narrow.

Our knowledge of the Australian *Turridæ* is still very incomplete. The fauna of eastern Australia from Hobart to Torres Strait is best represented in this paper; that of the north and west is scarcely known at all; that of the south coast has been elaborated in excellent papers by Sir Joseph Verco.

Re-arrangement of species and genera to conform with modern taxonomy has rejected such old friends as *Pleurotoma*, *Drillia*, *Mangelia*, *Glyphostoma*, *Clathurella*, *Cythara*, and *Bela*, so that *Daphnella* alone survives of the generic names used in this group for our fauna by the last generation of conchologists.

About three hundred and seventy recent species discussed in the following pages are divided into four sub-families. First are the *Turrinæ*, distinguished by a narrow unguiculate operculum with an apical nucleus. As this feature is not always available for study, it is useful to note that the nuclear whorl is comparatively large and almost as broad as the rest of the protoconch, and that the interior of the shell is often fluted.

An operculum with a medio-lateral nucleus is held to be the distinguishing feature of the sub-family *Clavatulinæ*.

Those genera are assigned to the sub-family *Mangiliinæ*, in which the protoconch is helicoid, with a very small initial, and rapidly increasing subsequent whorls. Here the texture of the adult shell is frequently "gritty," from a sculpture of minute grains; the varix is usually well developed, and the fasciole evanescent. A series of pustules on the columella is an ordinary feature. The operculum is said to be missing.

An elaborately sculptured protoconch contrasts with the smooth protoconch of previous groups, and gives ready recognition to the fourth family—the *Daphnellinæ*.

I have to thank the Trustees of the Macleay Museum, University of Sydney, for the loan of the Turrids taken by the Chevert Expedition, and the Council of the Linnean Society of New South Wales for permission to reprint some text figures.

*Family* TURRIDÆ.

*Sub-family* TURRINÆ.

TURRIS *Müller.*

*Turris* Müller, Delic. Nat. Selectæ, i., 1766, p. 129, type *Murex babylonius* Linne. *Id.* Bolten, Mus. Bolt. 1798, p. 123. *Id.* Dall Proc. U. S. Nat. Mus., liv., 1918, p. 332.

*Pleurotoma* Lamarck, Mem. Soc. Nat. Hist. Paris, 1799, p. 73.

*Lophiotoma* Casey, Trans. Acad. Sci. St. Louis, xiv., 1904, p. 130.

*Turris* is a strictly tropical genus. The shell is large, with a tall slender spire; outer lip sharp, without fold or thickening; the notch is a deep slit with parallel sides following a walled-in fasciole; within the body whorl are sharp raised revolving threads (Pl. xlii., fig. 1), a feature shared by related genera. Protoconch of two smooth rounded whorls (Pl. xlii., fig. 3). Operculum unguiculate, with apical nucleus. The animal has been figured by Quoy and Gaimard,[1] and by Gould.[2]

The species catalogued by Brazier[3] as *Pleurotoma brevicaudata* is not that, but is described in this paper as *Turridrupa deceptrix*. What the same writer considered to be *Pleurotoma punctata* (*op. cit.*, p. 151) is here recorded as *Gemmula graeffei*; and what Brazier catalogued as *P. jubata* and *P. armillata* are here included under *Turridrupa acutigemmata* Smith.

From the Australian Tertiary the following fossils have been described by Harris—*Turris optata*, *salebrosa*, *septemlirata*, *subconcava*, and *trilirata*.

TURRIS BABYLONIA *Linne.*

(Pl. xlii., fig. 1.)

*Murex babylonia* Linne, Syst. Nat., x., 1758, p. 753. *Id.* Knorr, Conchlien, iv., 1789, p. 403, pl. xiii., fig. 2. *Id.* Hanley, Ips. Linn. Conch., 1855, p. 299.

*Pleurotoma babylonia* Weinkauff, Conch. Cab., 1875, p. 10, pl. i., figs. 4, 5. *Id.* Tapparone Canefri, Bull. Soc. Zool. France, ix., 1878, p. 246. *Id.* Shirley, Proc. Roy. Soc. Queensland, xxiii., 1911, p. 101. *Id.* Schepman, Siboga Exped. Mon., xlixe., 1913, p. 398. *Id.* Bouge and Dautzenberg, Journ. de Conch., xli., 1914, p. 125.

*Buccinum coelatum* Martyn, Univ. Conch., ii., 1789, pl. xciv.

*Pleurotoma venusta* Reeve, Conch. Icon., i., 1843, pl. ix., fig. 79.

*Hab.* Queensland:—Cairns (Shirley).

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[1] Quoy and Gaimard—Astrolabe Zoologie, Pl. xxxv., fig. 4.
[2] Gould—Moll. U. S. Explor. Exped., Pl. xviii., fig. 311.
[3] Brazier—Proc. Linn. Soc. N.S.Wales, i., 1876, p. 152.

TURRIS CRISPA *Lamarck.*

*Pleurotoma crispa* Lamarck, Encycl. Meth. Vers., 1816, pl. ccccxxxix., fig. 4, and An. s. vert., vii., 1822, p. 95. *Id.* Kiener, Coq. Viv., 1840, p. 8, pl. ii., fig. 1. *Id.* Reeve, Conch. Icon., i., 1843, pl. ii., fig. 11. *Id.* Weinkauff, Conch. Cab., 1875, p. 9, pl. i., figs. 1, 2. *Id.* Brazier, Proc. Linn. Soc. N.S.Wales, ii., 1877 (1878), p. 368. *Id.* Schepman, Siboga Exped. Mon., xlixe., 1913, p. 398.

*Pleurotoma grandis* Griffiths and Pidgeon, Mollusca, 1833, p. 599, pl. xxiii., fig. 1. *Id.* Reeve, Conch. Icon., i., 1843, pl. ii, fig. 13. *Id.* Shirley, Proc. Roy. Soc. Queensland, xxiii., 1911, p. 101.

*Hab.* Queensland:—20 fathoms, Darnley Island (Brazier); 10 fathoms, Mapoon, Gulf of Carpentaria (self).

TURRIS INDICA *Bolten.*

*Turris indica* Bolten, Mus. Bolt., 1798, p. 124 for Conch. Cab., iv., pl. cxlv., figs. 1345-6. *Id.* Melvill, Proc. Malac. Soc. xii., 1917, p. 143. (not *Pleurotoma indica* Deshayes, in Belanger Voy. Indes Orient. Zool., 1833, p. 95).

*Pleurotoma marmorata* Lamarck, An. s. vert., vii., 1822, p. 95 (not *P. marmorata* Lamarck, 1816, q.v.). *Id.* Blainville, Dict. Sci. Nat. Meth., xli., 1826, p. 385. *Id.* Gray, Zool. Beechey Voy., 1839, p. 119, pl. xxxiv, fig. 9. *Id.* Kiener, Coq. Viv., 1840, p. 9, pl. vi., fig. 1, pl. vii., fig. 2. *Id.* Reeve, Conch. Icon., i., 1843, pl. iii., fig. 216. *Id.* Schmeltz, Mus. Godeffroy, Cat., iv., 1869, p. 90. *Id.* Brazier, Proc. Linn. Soc. N.S.Wales, ii., 1877 (1878), p. 36. *Id.* Smith, Proc. Zool. Soc., 1879, p. 186. *Id.* Watson, Chall. Rep. Zool., xv., 1886, p. 277. *Id.* Smith, Ann. Mag. Nat. Hist. (6), xvi., 1895, p. 263. *Id.* Sturany, Pola Exped. Moll., 1903, p. 228, pl. iv., fig. 1. *Id.* Schepman, Siboga Exped. Mon., xlixe., 1913, p. 399. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 128.

*Pleurotoma neglecta* Reeve, Conch. Syst., ii., 1842, p. 189, pl. ccxxxv., fig. 2.

*Pleurotoma hastula* Reeve, Conch. Icon., i., 1843, pl. xvii., fig. 139.

*Hab.* Queensland:—25 fathoms, Darnley Island (Brazier); Cape York ("Challenger"). Northern Territory:—Darwin (Spencer).

TURRIS MARMORATA *Lamarck.*

(Plate xlii., figs. 2-3.)

*Pleurotoma marmorata* Lamarck, Encycl. Meth., 1816, pl. ccccxxxix., fig. 6, expl. pl. p. 8 (not *P. marmorata* Lamarck, An. s. vert., vii., 1822, p. 95 =*T. indica* Bolten).

*Pleurotoma albina* Lamarck, An. s. vert, vii., 1822, p. 96. *Id.* Gray, Zool. Beechey Voy., 1839, p. 120, pl. xxxiv., fig. 4. *Id.* Kiener, Coq. Viv., 1840, p. 11, pl. xv., fig. 1.

*Pleurotoma peaseana* Dunker, Malak. Blatt., xviii., 1871, p. 158. *Id.* Weinkauff, Conch. Cab., 1876, p. 69, pl. xv., figs. 1, 3.

*Pleurotoma jickelii* Weinkauff, Conch. Cab., 1875, p. 20, pl. iv., figs. 2, 3.

*Pleurotoma tigrina* Potiez and Michaud, Galerie Moll. Mus. Douai, i., 1838, p. 448. *Id.* Brazier, Proc. Linn. Soc. N.S.Wales, ii., 1877 (1878), p. 368.

*Turris acuta* Hedley, Proc. Linn. Soc. N.S.Wales, xxxii., 1907, p. 484.

*? Lophiotoma microsticta* Casey, Trans. Acad. Sci. St. Louis, xiv., 1904, p. 130.

Thus I have identified a shell which is common along the east coast of tropical Queensland, both in the muddy estuary and off coral reefs. In life it is clothed in a thick fibrous epidermis which, as in my figure, hides the colour pattern of the shell beneath. The size and density of the brown dots vary. Some difference in proportion also occurs, thus a stout specimen from Hope Island is 42 mm. long and 13 mm. broad, but a slender specimen from Cape Flattery is 40 mm. long and 10 mm. broad. A shell 30 mm. in length which I dredged alive at the entrance of the Starcke River is here illustrated (Pl. xlii., fig. 2). Another (Pl. xlii., fig. 3) dredged in 3 fathoms off Eagle Island, North Queensland, exhibited the following features:—Apex mucronate, of two smooth and glossy whorls, followed by whorls bearing a strong subsutural ridge and a double peripheral keel. The upper four whorls are distinguished by a uniform cinnamon brown from the white remainder of the shell.

The confusion of nomenclature applied to this species was in the first instance probably due to the blindness of Lamarck, whereby the names of different species were displaced. Thus the shell named *Pleurotoma marmorata* in 1822 was different to what he had figured under that name in 1816. Blainville[4] was the first to observe the transposition. Brazier, who was the first to note this as an Australian species, used for it the name of *Pleurotoma tigrina*; but, according to Kiener's figure of authentic material, *P. tigrina* differs by its broader build and particularly by the occurence of spiral threads within the fasciole. Subsequently, following a reference by Deshayes,[5] I called the species *Turris acuta*. On reconsideration, the shell figured as *acuta* by Perry[6] seems to differ in shape from *T. tigrina*, and to approach that of *Gemmula granosa* Helbling. Deshayes further suggested that *Pleurotoma punctata* of Schubert and Wagner might be united to *T. tigrina*, but I should prefer to regard that as identical with *Pleurotoma unedo* Kiener.

*Hab.* Queensland:—30 fathoms, Darnley Island; 14 fathoms, Princess Charlotte Bay (Brazier); Murray Island; Starcke River; Lizard Island; Eagle Island; Cape Flattery; Hope Island; Palm Island; Mast Head Reef (self).

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[4] Blainville—Dict. Sci. Nat. Meth., xli., 1826, p. 385.

[5] Deshayes—Anim. sans. vert. (2), ix., 1843, p. 352.

[6] Perry—Conchology, 1811, Pl. liv., fig. 4.

### Turris spectabilis *Reeve.*

*Pleurotoma spectabilis* Reeve, Conch. Icon., i., 1843, pl. i., fig. 6. *Id.* Brazier, Proc. Linn. Soc. N.S.Wales, ii., 1877 (1878), p. 368.

*T. spectabilis* and *T. garnonsi* Reeve, form a pair differing in the length of the canal. Similar pairs are *T. tigrina* Lamk, and *T. abbreviata* Reeve; *T. marmorata* Lamk, and *T. cingulifera* Lamk.

*Hab.* Queensland:—20 fathoms, Darnley Island (Brazier).

### Turris undosa *Lamarck.*

*Pleurotoma undosa* Lamarck, Encycl. Meth. Vers., 1816, pl. ccccxxxix., fig. 5, and Anim. s. vert., vii., 1822, p. 95. *Id.* Reeve, Conch. Icon., i., 1843, pl. iii., fig. 18. *Id.* Watson, Chall. Rep. Zool., xv., 1886, p. 279.

*Hab.* Queensland:—Albany Passage ("Challenger").

### Gemmula *Weinkauff.*

*Gemmula* Weinkauff, Jahrb. deutsch. malak. Gesell., ii., 1876, p. 287. *Id.* Cossman, Essai Paleoconch. Comp., i., 1896, p. 62. Type *Pleurotoma gemmata* Reeve.

Weinkauff proposed *Gemmula* as a sub-genus for the reception of *carinata* Gray, *speciosa* Reeve, *monilifera* Pease, *gemmata* Reeve, *græffei* Weinkauff, and *amabilis* Weinkauff. From these Cossmann selected *gemmata* as type. It may be here observed that *gemmata* should be ascribed to Reeve, not, as is usual, to Hinds, for Reeve published it in April, 1843, and Hinds in October, 1843.

The bead-row of the fasciole readily distinguishes this genus from related forms. Between the smooth protoconch and the adult whorls two or three whorls intervene with descrepant sculpture of fine arcuate longitudinal riblets.

The genus is perhaps represented in the Australian Tertiary by *Pleurotoma sayceana* Chapman.[7]

### Gemmula graeffei *Weinkauff.*

*Pleurotoma punctata* Brazier, Proc. Linn. Soc. N.S.Wales, i., 1876, p. 151 (not *P. punctata* Reeve).

*Pleurotoma (Gemmula) græffei* Weinkauff, Jahrb. deut. malak. Gesell., ii., 1876, p. 290, pl. ix., figs. 9, 10. *Id.* Weinkauff, Conch. Cab., 2 ed., ix., 1876, p. 71, pl. iii., figs. 9, 10.

On the identification of a friend, I reported[8] this as *Turris granosus* Helbling, but on re-examination of the material I now regard this Queensland shell as *G. græffei*.

*Hab.* Queensland:—20 to 30 fathoms, Darnley Island (Brazier); 5 to 8 fathoms, Cairns Reef (self).

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[7] Chapman—Proc. Roy. Soc. Vict., xxv., 1912, p. 191, Pl. xii., fig. 7.

[8] Hedley—Proc. Linn. Soc. N.S.Wales, xxxiv., 1909, p. 453.

GEMMULA HOMBRONI *nom. nov.*

*Pleurotoma fusca* Hombron and Jacquinot, Voy. Pole sud. Zool., iv., 1853, p. 111, pl. xxv., figs. 19, 20. *Id.* Smith, Proc. Zool. Soc.. 1879, p. 186, and Ann. Mag. Nat. Hist. (7), xiii., 1904, p. 456. *Id.* Sturany, Denk. Math. Nat. K. Akad. Wiss. Wien., lxxiv., 1903, p. 229, pl. iii., fig. 3. *Id.* Schepman, Siboga Exp. Mon., xlixe., 1913, p. 402. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 144. (Not *Pleurotoma fusca* C. B. Adams, Proc. Bost. Soc. Nat. Hist., ii., 1845, p. 4.)

*Hab.* Queensland:—Torres Strait (type, Hombron and Jacquinot).

GEMMULA MONILIFERA *Pease.*

*Pleurotoma monilifera* Pease, Am. Journ. Conch., 1870, p. 68. *Id.* Weinkauff, Jahrb. deut. malak. Gesell., ii., 1876, p. 289, pl. ix., figs. 1, 3.

*Pleurotoma gemmata* Brazier, Proc. Linn. Soc. N.S.Wales, i., 1876, p. 151 (not *Pleurotoma gemmata* Reeve).

*Hab.* Queensland:—11 fathoms, Darnley Island (Brazier); 5 to 8 fathoms, Murray Island (self).

ASTHENOTOMA *Harris and Burrows.*

*Asthenotoma* Harris and Burrows, Eocene and Oligocene Beds of Paris Basin, 1891, p. 113, *nom. nov.* for *Oligotoma* Bellardi, preocc. *Id.* Cossmann, Essai Paleoconch. Comp., ii., 1896, p. 104. *Id.* Sacco, Moll. Terr. Piemonte, xxx., 1904, p. 51. *Id.* Dall, Proc. Nat. Mus., liv., 1918, p. 322.

*Oligotoma* Bellardi, Mem. Acad. Roy. Sci. Turin (i.), xxix., 1875, p. 235, type *Pleurotoma basteroti* Desmoulins. *Id.* Jousseaume, Bull. Soc. Zool. France, viii., 1883, p. 197. *Id.* Cossmann, Cat. Illustr. Coq. Foss. Paris, iv., 1889, p. 255 (not *Oligotoma* Westwood, Trans. Linn. Soc., xvii., 1836, p. 373).

*Microdrillia* Casey, Proc. Acad. Nat. Sci. Philad., lv., 1903, p. 276, type *Pleurotoma cossmanni* Meyer.

*Tomopleura* Casey, Trans. Acad. Sci. St. Louis, xiv., 1904, p. 138, type *Pleurotoma nivea* Phillipi.

*Asthenotoma* is founded on a Miocene fossil, *Pleurotoma basteroti* Desmoulins,[9] which is co-generic, as Jousseaume has explained, with certain recent Indo-Pacific shells. It appears to me to be nearly related to *Turris*, with which spiral ridges deep within the throat and a smooth mucronate apex associate it. From *Turris* it differs by smaller size, bent columella, very short and upturned canal, a widely gaping instead of a linear notch, and by the radial sculpture. The operculum in a specimen of *A. nivea* Philippi, dredged at Karachi, and kindly given to me by Dr. J. C. Melvill, is oblong with a subterminal nucleus (Pl. xlii., fig. 4).

From the Australian Tertiary, Professor Tate[10] has noted *Asthenotoma tatei* Cossmann, and *Pleurotoma consutilis* Tenison Woods.

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[9] Desmoulins—Act. Linn. Soc. Bordeaux, xii., 1842, p. 156.
[10] Tate—Proc. Roy. Soc. N.S.Wales, xxxi., 1898, p. 398.

ASTHENOTOMA CICATRIGULA *sp. nov.*

(Plate xlii., fig. 5.)

Shell lanceolate, rather small and solid. Colour buff, sometimes suffused with violet; interior pale purple. Whorls eleven, including a mucronate protoconch of two and a half smooth whorls. Sculpture:—On the penultimate are five elevated and polished spiral keels, and on the last whorl there are seventeen, including five on the snout; except the protoconch and snout the whole shell is over-run by fine close curved radial threads, which are interrupted by the spirals. Fasciole well marked, half its breadth below the suture; from a median spiral thread the contained radials are disposed in chevron. Lip simple, its edge toothed by the external keels; notch deeply incised, widely gaping; lower limb more horizontal than the upper. Inner lip a thin smear, no tubercle at its insertion. On the inside of the lip are six entering raised spiral threads, which stop short of the edge. Length 15 mm., breadth 5 mm.

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (type); 10 fathoms, Mapoon; 15 fathoms, Palm Islands; 5 to 10 fathoms, Hope Islands; Barney Point, Port Curtis (self). A specimen in the Macleay Museum is labelled Ovalau, Fiji.

ASTHENOTOMA COGNATA *Smith.*

(Figure 1.)

*Pleurotoma cognata* Smith, Ann. Mag. Nat. Hist., (4), xix., June 1877, p. 490. *Id.* Hedley, Proc. Linn. Soc. N. S. Wales, xxxiii., 1908, p. 487, pl. x. *bis.*, fig. 2. *Id.* Shirley, Proc. Roy. Soc. Queensland, xxiii., 1911, p. 101.

*? Oligotoma poulœnsis* Jousseaume, Bull. Soc. Zool. France, viii., 1883, p. 199, pl. x., fig. 9. *Id.* Melvill and Standen, Proc. Zool. Soc., 1901, p. 434.

Fig. 1.

By its stronger and more distinct spirals this species is readily distinguished from *Asthenotoma subtilinea.*

*Hab.* N. S. Wales:—Woolgoolga (Laseron); Ballina (Lower). Queensland:—Burleigh Heads (Shirley); Caloundra (Gross); Bustard Head (Pulleine); Facing Island, Port Curtis (Kesteven).

ASTHENOTOMA SUBTILINEA *Hedley.*

(Plate xlii., fig. 6.)

*Pleurotoma violacea* Angas (not Hinds), Proc. Zool. Soc., 1871, p. 92.

*? Pleurotoma vertebrata* var. *albida* Bouge and Dautzenberg, Jour. de Conch, lxi., 1914, p. 132.

*Asthenotoma subtilinea* Hedley, Journ. Roy. Soc. N. S. Wales, li., 1918, p. M 82.

The shell now discussed was first recorded by Angas from Broken Bay, New South Wales, under the title of *Pleurotoma violacea* Hinds, but

that name was invalid because Adams and Mighels, of Boston, had employed it two years before Hinds.[11] In consequence Adams, in 1850,[12] offered *Pleurotoma reevei* to replace the second *Pleurotoma violacea*. Unfortunately for this proposal, Bellardi[13] had already engaged the name *Pleurotoma reevei* for an Italian fossil. It has been suggested that *Pleurotoma nivea* Philippi[14] applied to *Pleurotoma violacea* Hinds, but that Formosan shell has not been figured, and the identification is uncertain. A recent revision by Messrs. Bouge and Dautzenberg[15] of this species, or group of species, unites under *Pleurotoma vertebrata* Smith[16] all the species above mentioned, together with *Oligotoma makimonos* Jousseaume.[17]

Contrasting the Sydney shell with the figure of that which was dredged by H.M.S. "Sulphur," in the Strait of Macassar, considerable difference appears. The purple colour of *Pleurotoma violacea* does not occur on ours. The Malayan shell is shown with a concave profile, a slender tapering summit, an inflated body whorl and a produced canal—which features do not match our shell. It is suggested that these are different species. Japanese specimens of *Pleurotoma vertebrata* are smaller, more slender, more coarsely sculptured, and coloured differently to *Asthenotoma subtilinea*. In size and general appearance our shell agrees with *Oligotoma makimonos* Jousseaume, but has finer and more numerous spirals. Under these circumstances its identity is best preserved by describing it as distinct.

Shell rather large and solid, cylindro-conic, tapering evenly. Colour uniform grey. Whorls ten. Sculpture:—On the penultimate are five larger and five smaller spirals; on the last whorl are twenty-five spirals, of which seven are on the snout, besides uncounted threads, one in each of the broader furrows; numerous close-set radial threads lattice the spaces between the main spirals, but do not cross them; three spirals run along the fasciole, the outer rows of radial bars there contained are set in chevron. Aperture pyriform, outer lip simple; notch on the shoulder, rather deeply incised; canal short; columella sharply bent below. Length 22 mm., breadth 8 mm.

*Hab.* N. S. Wales:—Port Jackson (type); Port Stephens (old coll.); 8 fathoms, Green Point, Watson's Bay (Brazier). Queensland:—20 to 27 fathoms, off Mast Head Reef (self); beach at mouth of Annam River (self).

FILODRILLIA *gen. nov.*

*Filodrillia* is a group from deep water which resembles *Etrema* in the form of the sinus, but not of the protoconch, but differs in the thin slender shell, turreted whorls, absence of ribs and varix. Spiral sculpture predominates.

Type *Drillia tricarinata* Tenison-Woods.

*Pleurotoma albula* Hutton, represents this genus in New Zealand, and *Pleurotoma dilectoides* Chapman and Gabriel, in the Australian Tertiary.

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[11] Hinds—Proc. Boston Soc. Nat. Hist., i., 1841, p. 50.
[12] Adams—Contributions to Conchology, 1850, p. 54.
[13] Bellardi—Monogr. Pleurot., 1847, p. 55, pl. iii., fig. 20.
[14] Philippi—Zeit. f. Malak., viii., 1851, p. 92.
[15] Bouge and Dautzenberg—Journ. de Conch., lxi., 1914, p. 130.
[16] Smith—Proc. Zool. Soc., 1879, p. 186, pl. xix., fig. 6.
[17] Jousseaume—Bull. Soc. Zool. France, viii., 1883, p. 198, pl. x., fig. 4.

FILODRILLIA COLUMNARIA *sp. nov.*

(Plate xlii., fig. 7.)

Shell slender elongate-fusiform. Colour buff, with a pale peripheral zone underlined by an orange band. Whorls seven and a half, of which two constitute the protoconch, angled at the shoulder, flattened above and rounded beneath, excavate at the base. Sculpture:—No radials occur; the fasciole area is traversed by three or four fine close threads; the rest of the shell carries stronger cords, uniform in size and evenly spaced; of these there are seven on the penultimate and twenty-two on the last whorl. Aperture open, right insertion ascending above the plane of the suture; a slight varix behind the aperture; outer edge of the expanded lip denticulate by the spiral sculpture, inner lip a thin sheet of callus; sinus deep, spout shaped; canal short, open. Length 9·5 mm., breadth 3·3 mm.

This species has a slight resemblance to *Etrema denseplicata*, compared with which it is smaller, proportionately narrower, and devoid of radial sculpture.

*Hab.* Tasmania:—100 fathoms, Cape Pillar (type); 80 fathoms, Schouten Island (May).

FILODRILLIA COSTICAPITATA *Verco.*

*Drillia costicapitata* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 296, pl. xxvii., figs. 1-2.

*Hab.* South Australia:—40 fathoms, Beachport (type, Verco).

FILODRILLIA DILECTA *Hedley.*

(Figure 2.)

*Drillia dilecta* Hedley, Mem. Austr. Mus., iv., 1903, p. 387, fig. 100, and Rec. Austr. Mus., vi., 1905, p. 42. *Id.* Verco, Trans. Roy. Soc. S. Australia, xxxiii., 1909, p. 306.

*Asthenotoma dilecta* May, Check-list Mollusca Tasmania, 1921, p. 77.

This species is represented in Kalimnan strata by *A. dilectoides* Chapman and Gabriel.[18]

Fig 2.

*Hab.*—Port Stephens type, 111 fathoms, Cape Byron (Halligan). 50 fathoms, Cape Three Points; 80 fathoms, Narrabeen; 50 fathoms, Wata Mooli; 60 to 70 fathoms, Port Kembla ("Thetis"), New South Wales; 100 fathoms, Cape Wiles (self). 90 to 130 fathoms, Cape Jaffa; 104 fathoms, Neptune Island; 150 fathoms, Beechport (Verco), South Australia.

Var. *parabolo* Verco, Trans. Roy. Soc. S. Australia, xxxiii., 1909, p. 306.

*Hab.* South Australia:—90 fathoms, Cape Jaffa; 200 fathoms, Beachport (Verco).

[18] Chapman and Gabriel—Rec. Geol. Survey Victoria, iii., 4, 1916, p. 393.

FILODRILLIA DULCIS *Sowerby.*

*Daphnella dulcis* Sowerby, Proc. Malac. Soc., ii., 1896, p. 26, pl. iii., fig. 5.

*Drillia dulcis* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 297.

*Hab.* South Australia:—15 to 20 fathoms, St. Vincent Gulf (type); 40 fathoms, Beachport (Verco); 35 fathoms, St. Francis Island (Verco). Tasmania:—100 fathoms, Cape Pillar (Hedley and May).

FILODRILLIA HASWELLI *Hedley.*

*Drillia haswelli* Hedley, Rec. Austr. Mus., vi., 1907, p. 297, pl. lv., fig. 22.

*Hab.* N.S.Wales:—80 fathoms, Narrabeen (type); 50 fathoms, Cape Three Points; 100 fathoms, Wollongong; 300 fathoms, Sydney (self).

FILODRILLIA HILUM *Hedley.*

*Mangelia hilum* Hedley, Proc. Linn. Soc. N.S.W., xxxiii., 1908, p. 471, pl. ix., fig. 17. *Id.* Hedley and May, Rec. Austr. Mus., vii., 1908, p. 112. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxiii., 1910, p. 90.

*Hab.* N.S.Wales:—12 fathoms, Sydney (type, Brazier). Tasmania:—100 fathoms, Cape Pillar (May and Hedley). Victoria:—Wilson's Promontory ("Endeavour").

FILODRILLIA LACTEOLA *Verco.*

*Drillia lacteola* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 304, pl. xxvi., fig. 5. *Id.* May, Proc. Roy. Soc. Tasm., 1910 (1911), p. 308. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxvi., 1913, p. 74.

*Hab.* South Australia:—90 fathoms, Cape Jaffa (type); 110 fathoms, Beachport; 62 fathoms, Cape Borda (Verco). Victoria:—40 fathoms, Ninety-mile Beach (Gatliff). Tasmania:—100 fathoms, Cape Pillar; 80 fathoms, Schouten Island (May).

Var. CREBRISTRIATA *Verco.*

Verco *op. cit.*

*Hab.* South Australia:—40 fathoms, Beachport (Verco).

Var. SINUSIGENS *Verco.*

Verco *op. cit.*

*Hab.* South Australia:—100 fathoms, Beachport (Verco).

FILODRILLIA MUCRONATA *sp. nov.*

(Plate xlii., fig. 8.)

Shell elongate, fusiform. Colour uniform ivory-yellow. Whorls seven, of which two compose the protoconch. Sculpture:—Radials absent; on the shoulder a sharp angle is defined by a prominent cord, above which six fine and closely packed threads occupy the fasciole area; below this the cords as they descend become smaller and closer, those in the hollow of the base being the most crowded; there are twenty-two such cords on

the last whorl, and three or four on the upper whorls. Aperture:—Right insertion slightly mounting above the plane of the suture; the sinus a large U-shaped spout, below which is an incipient varix; beyond the latter the free limb of the outer lip bends inwards; within this lip are sometimes a few entering plications; inner lip a sheet of callus, thin above, but with a thickened margin below; canal short, expanding, and open. Length 9·5 mm., breadth 3·5 mm.

On first acquaintance I considered this to be a variety of *Filodrilla tricarinata*, but more material convinces me that it is distinct, because of a narrower protoconch, and finer, more numerous spirals.

*Hab.* N.S.Wales:—24 fathoms, Cabbage Tree Island, Port Stephens (type, Museum Expedition); 22 fathoms, Manning Heads ("Thetis"); 75 fathoms, Port Kembla ("Thetis"); 50 fathoms, Botany Heads ("Thetis"); 80 fathoms, Narrabeen (self).

FILODRILLIA ORNATA *sp nov.*

(Plate xlii., fig. 9.)

Shell small, rather solid, turreted, subcylindrical. Colour uniform buff. Whorls rounded, six, inclusive of the bulbous protoconch. Sculpture:—The flattened and conspicuous fasciole carries three or four small spiral threads; the remaining spirals are sharp cords, narrower than their interspaces, larger and wider apart on the periphery, about fifteen on the body whorl and five on the penultimate; radial riblets, so faint as to scarcely appear in the intercostal furrows, form beads on these spirals; these riblets are most developed on the fourth and fifth whorls, and vanish gradually on the last whorl. Aperture open, sinus wide and deep; inner lip with a thin callus; canal short and broad. Length 7·5 mm., breadth 3 mm.

*Hab.* Tasmania:—100 fathoms, Cape Pillar (type, May and Hedley).

FILODRILLIA RECTA *Hedley.*

(Figure 3.)

*Leucosyrinx recta* Hedley, Mem. Austr. Mus., iv., 1903, p. 386, fig. 99. *Id.* May, Proc. Roy. Soc. Tasm., 1910 (1911), p. 308. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxxvi., 1913, p. 74.

*Hab.* N. S. Wales:—75 fathoms, Port Kembla (type); 50 fathoms, Cape Three Points ("Thetis"); 50 fathoms, Botany Heads ("Thetis"). Victoria:—40 fathoms, Ninety-mile Beach (Gatliff). Tasmania:—80 fathoms, Schouten Island (May).

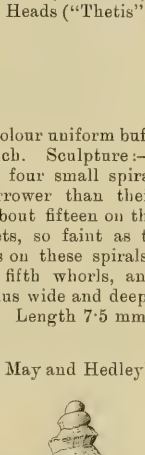

Fig. 3.

FILODRILLIA STADIALIS *sp. nov.*

(Plate xlii., fig. 10.)

Shell small, turreted, ovate-fusiform. Colour dull white, the glassy opaque protoconch contrasting with the dull texture of the rest of the shell. Whorls six, inclusive of a two-whorled protoconch, rather inflated, sharply angled at the shoulder. Sculpture:—Five fine close threads traverse the fasciole area; below the shoulder angle thirteen spaced cords become progressively smaller and closer towards the end of the shell, four of these ascending to the penultimate and two to the uppermost whorl; faint curved radial dashes start below the shoulder angle and vanish on the base. Aperture open, without varix; sinus broad and deep; canal short and open. Length 6·5 mm., breadth 3 mm.

Compared with its ally *F. ornata*, *F. stadialis* is a shorter, stouter shell, with a more elevated protoconch, fewer spirals, and fainter radials.

*Hab.* N. S. Wales:—100 fathoms, Wollongong (type); 80 fathoms, Narrabeen (self); 59 fathoms, Wata Mooli ("Thetis").

FILODRILLIA STEIRA *sp. nov.*

(Plate xlii., fig. 11.)

Shell small, solid, biconical. Colour uniform pale buff. Suture channelled. Whorls seven, of which two constitute the protoconch. Sculpture:—The dominant feature is a prominent peripheral keel revolving round all the whorls; the summit of each whorl is crowned by a double thread; along the fasciole area run four slender threads; between the keel and the anterior end of the shell occur about twenty cords, diminishing progressively as they recede from the periphery; numerous crescentic threads cross the excavate fasciole; fine radial lines also appear in the interstices of the basal spirals. Aperture:—Sinus wide and deep, canal short and open, a thin film of callus on the upper lip. Length 8 mm., breadth 3·5 mm.

Compared with *A. dilecta* this is a shorter, broader shell, and is especially distinguished by the prominent single keel on the periphery.

*Hab.* N. S. Wales:—50 fathoms, Cape Three Points (type); 50 fathoms, Botany Heads ("Thetis"); 59 fathoms, Wata Mooli ("Thetis"); 24 fathoms, Cabbage Tree Island (Museum Expedition); 111 fathoms, Cape Byron (Halligan); 80 fathoms, Gabo Island ("Endeavour"); 80 fathoms, Narrabeen (self).

FILODRILLIA TROPHONOIDES *Verco.*

*Drillia trophonoides* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 303, pl. xxvi., figs. 3, 4.

*Hab.* South Australia:—150 fathoms, Beachport (type); 55 fathoms, Cape Borda; 130 fathoms, Cape Jaffa (Verco).

FILODRILLIA TRICARINATA *Tenison Woods.*

(Figure 4.)

*Drillia tricarinata* Tenison Woods, Proc. Linn. Soc. N.S.W., ii., 1878, p. 265. *Id.* Hedley, Rec. Austr. Mus., iv., 1901, p. 23, fig. 3. *Id.* Hedley, Mem. Austr. Mus., iv., 1903, p. 389, fig. 104. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 305. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxiii., 1910, p. 89. *Id.* May, Proc. Roy. Soc. Tasm., 1910 (1911), p. 308.

Fig. 4.

*Hab.* N.S.Wales:—45 fathoms, Sydney Heads (type); 24 fathoms, Port Stephens; 50 fathoms, Cape Three Points; 50 fathoms, Botany Heads; 75 fathoms, Port Kembla ("Thetis"). Victoria:—Wilson's Promontory ("Endeavour"). Tasmania:—80 fathoms, Schouten Island (May). South Australia:—300 fathoms, Cape Jaffa; 150 fathoms, Beachport (Verco).

COLUMBARIUM *von Martens.*

*Columbarium* von Martens, Conchol. Mittheil., ii., 1881, p. 105; type *Pleurotoma spinicincta* von Martens.

The author of the genus has given the following epitome of its characters[19]: "Notch of the outer lip very faint, canal very distinct, as long as or longer than the rest of the shell, whorls spinously keeled, nucleus globular. . . . The radula exhibits two blunt dagger-shaped teeth, not unlike those of *Defrancia*."

Not appreciating the significance of the radula, Cossmann has argued[20] for the transference of the group to *Fusus*.

From the Australian Tertiary, Professor R. Tate has described the following:—*C. acanthostephes*, *cochleatum*, *craspedotum*, *dictyotis*, *foliaceum*, *senticosum*, and *spiniferum*.

COLUMBARIUM DISTEPHANOTIS *Melvill.*

*Columbarium distephanotis* Melvill, Journ. of Conch., vi., 1891, p. 405, pl. ii., fig. 4.

*Hab.* Queensland:—17 fathoms, Torres Strait (type, Manchester Museum).

COLUMBARIUM PAGODOIDES *Watson.*

*Fusus pagodoides* Watson, Journ. Linn. Soc. Zool., xvi, 1881, p. 383. *Id.* Watson, Challenger Rep. Zool., xv., 1886, p. 197, pl. xiv., fig. 3.

*Columbarium pagodoides* Hedley, Rec. Aust. Mus., vi., 1906, pp. 213, 285.

*Hab.* N.S.Wales:—410 fathoms, off Sydney (type, "Challenger"); 250 fathoms, off Sydney; 80 fathoms, Narrabeen; 100 fathoms, Wollongong (self).

[19] von Martens—Zool. Record, 1881, p. 44, Moll.
[20] Cossmann—Essais Pal. Comp., ii., 1896, p. 64.

COLUMBARIUM SPINICINCTUM *von Martens.*

*Pleurotoma (Columbarium) spinicinctum* von Martens, Conchol. Mittheil., ii., 1881, p. 105, pl. xxxi., figs. 1-3. *Id. op. cit.* Schacko, p. 123, pl. xxiv., figs. 1-2. *Id.* von Martens, Forsch. Gazelle, iii., 1889, p. 266.

*Columbarium spinicinctum* Kobelt, Conch. Cab., 1886, p. 172, pl. xxxiv., figs. 1-2.

*Columbarium pagoda* var. *spinicincta* Tryon, Man. Conch., vi., 1886, p. 176, pl. vii., fig. 99.

*Hab.* Queensland :—76 fathoms, 25 miles east of Noosa Heads (type, "Gazelle").

LEUCOSYRINX *Dall.*

*Leucosyrinx* Dall, Bull. Mus. Comp. Zool., xvii., 1889, p. 75. *Id* Suter, Man. N.Z. Moll., 1913, p. 470.

*Leucosyrinx recta* Hedley, formerly referred here, is now placed in *Filodrillia*.

LEUCOSYRINX CASEARIA *Hedley and Petterd.*

*Leucosyrinx casearia* Hedley and Petterd, Rec. Austr. Mus., vi., 1906, p. 220, pl. xxxvii., fig. 5.

*Hab.* N.S.Wales :—250 fathoms, off Sydney (type, self).

TURRIDRUPA *gen. nov.*

Shell solid, cylindro-fusiform. Colour usually monochrome, sometimes brown orange or yellow. Protoconch of two smooth turbinate whorls, followed by a whorl ornamented with close arcuate riblets. Adult sculpture consisting of numerous revolving keels, one or more of which may break up into bead rows. Fasciole indefinite. Notch a short subcircular incision with a raised margin. Throat with revolving ridges on the palate. Type *Pleurotoma acutigemmata* Smith.

Besides the species which here follow, the inclusion in *Turridrupa* is suggested of—*Pleurotoma cerithina* Anton (= *digitalis* Reeve), *cincta* Lamarck, *jubata* Hinds, *rougeyroni* Souverbie, and *Drillia sibogæ* Schepman.

TURRIDRUPA ACUTIGEMMATA *Smith.*

(Plate xlii., figs. 12, 13.)

*Pleurotoma acutigemmata* Smith, Ann. Mag. Nat. Hist., (4), xix., 1877, p. 489, and (7), xiii., 1904, p. 457. *Id.* Melvill and Standen, Proc. Zool. Soc. 1901, ii., p. 433. *Id.* Melvill and Sykes, Proc. Malac. Soc., ii., 1897, p. 145, *Id.* Schepman, Siboga Exped., xlix., 1913, p. 400.

*Turris acutigemmata* Melvill, Proc. Malac. Soc., xii., 1917, p. 146, pl. viii., fig. 1.

*Pleurotoma jubata* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 152 (not *P. jubata* Hinds).

*Pleurotoma armillata* Brazier, *op. cit.*, p. 151 (not *P. armillata* Reeve).

*Hab.* Queensland :—20 fathoms, Darnley Island (Brazier); 5 to 10 fathoms, Hope Island (self).

TURRIDRUPA BIJUBATA *Reeve.*

*Pleurotoma bijubata* Reeve, Conch. Icon., i., 1843, pl. x., fig. 87. *Id.* Reeve, Proc. Zool. Soc., 1843, p. 182. *Id.* Smith, Journ. Linn. Soc. Zool., xii., 1876, p. 537. *Id.* Brazier, Journ. of Conch., ii., 1879, p. 186. *Id.* Smith, Fauna Laccadive, ii., 1903, p. 603. *Id.* Couturier, Journ. de Conch., lv., 1907, p. 129.

*Drillia bijubata* Schmeltz, Cat. Mus. Godeffroy, iv., 1869, p. 90. *Id.* Tapparone Canefri, Bull. Soc. Zool. France, 1878, p. 247.

*Surcula bijubata* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 144.

*Hab.* Queensland:—Fitzroy Island (Brazier); Murray Island, Hope Island, and Palm Island (self).

TURRIDRUPA COMMENTICA *Hedley.*

*Drillia commentica* Hedley, Proc. Linn. Soc. N.S.W., xxxvi., 1915, p. 727, pl. lxxxii., fig. 59.

*Hab.* Queensland:—10 fathoms, Cape Sidmouth (type, Henn); 5 to 10 fathoms, Hope Island; 15 fathoms, Palm Island (self).

TURRIDRUPA DECEPTRIX *sp. nov.*

(Plate xlii., fig. 14.)

Shell elongate-conic, very solid, contracted at the base, constricted and channelled at the suture, last whorl about half the total length; eleven whorls, including the protoconch. Colour pale ochraceous-buff, aperture lighter. Sculpture:—Last whorl with thirteen, penultimate with four, and earlier whorls with three prominent spiral keels, the furrows between which carry faint radial striæ, and sometimes a small interstitial thread. Aperture:—There is a thin callus sheet on the inner lip, and a solid callus plug at the angle of the aperture; outer lip simple; sinus a semicircular notch with reflected margin; canal short, open, and slightly recurved; deep within the throat are five revolving raised threads. Length 14 mm., breadth 5 mm.

This is deceptively like *Turris brevicaudata*, but differs in the essential character of the peripheral carina, being single instead of double; it is besides smaller, more slender, with a shorter canal, and the whorls divided by a deeper suture. I have received a specimen of *T. deceptrix* labelled "*Pleu. bijubata* Reeve, Philippines."

*Hab.* Queensland:—30 fathoms, Darnley Island (type, Brazier).

TURRIDRUPA FASTOSA *Hedley.*

*Pleurotomella fastosa* Hedley, Rec. Austr. Mus., vi., 1907, p. 295, pl. lv., fig. 21.

*Hab.* N.S.Wales:—80 fathoms, Narrabeen (type, self).

### Turridrupa pertinax *Hedley*.

(Plate xliii., fig. 15.)

Shell small, cylindro-fusiform, contracted at the base. Colour pale buff, darker on the base and the columella. Whorls eight, including the protoconch. Suture deeply channelled. Sculpture:—On the last whorl there is a prominent keel on the shoulder, followed anteriorly by seven evenly spaced and gradually diminishing spirals; above the keel is a broad fasciole, crossed by fine crescentic riblets and bounded by a small spiral; on the upper whorls three spirals alone persist, the median being prominent. Aperture narrow; sinus wide and rather short; canal short and a little reflected; columella straight, with a thickened margin. Length 5 mm., breadth 1·5 mm.

This species may be distinguished from its associate, *T. commentica*, by less prominent keels and more cylindrical form.

*Hab.* Queensland:—5 to 10 fathoms, Hope Islands (type); 15 fathoms, Palm Island (self); 20 fathoms, between Cairns Reef and Endeavour Reef (McCulloch); off Cape Sidmouth (Henn); Darnley Island (Brazier). Papua:—Katow (Brazier).

### Epideira *Hedley*.

*Epideira* Hedley, Journ. Roy. Soc. N.S.W., li., 1918, p. M 79. Type *Clavatula striata* Gray, 1827.

Shell solid, ovate-acuminate, last whorl about as long as the spire. Sculpture:—A bead-row along the fasciole, and frequently another along the suture, separated by a broad furrow; the base is cancellate with radial and revolving cords. Protoconch smaller and less elevated than that of *Turris* or *Inquisitor*, of two smooth turbinate whorls, set a little obliquely, and from one aspect appearing bulbous. Fasciole ascending the spire in the middle of each whorl. Notch broad and shallow. Outer lip not inflected; canal very short. Pillar a little twisted. Operculum of the turrid type.

In general appearance this genus approaches *Clavatula*, to which indeed the type species was originally assigned. The operculum here noted (Plate xliii., fig. 20) in the case of *E. striata*, and previously described by Sir J. Verco for *E. perksi* and *E. quoyi*, however excludes it. In the pattern of the sculpture *Gemmula* has some likeness to *Epideira*, but the post-nepionic sculpture separates it. A near relation is *Bathytoma*, from which *Epideira* is separable by sculpture, shorter canal, taller spire, more numerous whorls, and straighter columella.

*Epideira* seems to be represented in New Zealand by *Pleurotoma rosea* Quoy and Gaimard.

### Epideira gabensis *sp. nov.*

(Plate xliii., fig. 16.)

Shell rather thin; ovate-lanceolate. Colour buff, variegated with white clouds about the periphery, and chestnut spots on the suture. Whorls seven, including a smooth two-whorled protoconch. Suture

irregular. Beneath the suture runs an unbeaded cingulus, followed by a distinct excavation. This is bounded by the fasciole, composed of a row of beads, compressed or inclined to crescentic, set at twenty-four to the last whorl and twenty to the penultimate. Anterior to the bead row are seven or eight major spirals, one or two of which recur on the upper whorls. Small spiral threads run along the furrow and the bead row, also two or three in each interstice of the major spirals. Fine growth lines occur over the whole shell. Aperture pyriform; lip simple and straight. Sinus at the end of the bead-row wide and shallow. Canal short and open. Length 21 mm., breadth 9 mm.

Nearest to this is *E. xanthophæs*, which is far narrower and has a smaller protoconch. *E. xanthophæs* has several bead rows, but *gabensis* only one, in which the beads are closer, smaller, and more compressed.

*Hab.* Victoria :—80 fathoms, Gabo Island (type, "Endeavour").

### Epideira jaffænsis *Verco.*

*Drillia jaffœnsis* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 298, pl. xxvi., figs. 7, 8, 9.

*Hab.* South Australia:—130 to 300 fathoms, Jaffa (type); 104 fathoms, Neptune Islands; 110 fathoms, Beachport (Verco).

### Epideira perksi *Verco.*

*Surcula perksi* Verco, Trans. Roy. Soc. S.A., xx., 1896, p. 224, pl. viii., fig. 3.

*Hemipleurotoma perksi* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p, 295.

*Hab.* South Australia :—15 fathoms, Thistle Island (type, Verco).

### Epideira philipineri *Tenison Woods.*

(Plate xliii., fig. 17.)

*Pleurotoma quoyi* Reeve, Conch. Icon., i., 1843, pl. xvi., fig. 137.

*Surcula quoyi* Tryon, Man. Conch., vi., 1884, p. 242, pl. vii., fig. 95.

*Hemipleurotoma quoyi* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 368. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 294, and xxxvi., 1912, p. 231 (not *Pleurotoma quoyi* Des Moulins).

*Pleurotoma monile* Rousseau, Zool. Voy. Pole Sud., v., 1854, p. 110, pl. xxv., figs. 17-18 (not *Pleurotoma monile* Kiener).

*Pleurotoma philipineri* Tenison Woods, Proc. Roy. Soc. Tasm., 1876 (1877), p. 136. *Id.* May, *op. cit.*, 1902 (1903), p. 110. *Id.* Hardy, *op. cit.*, 1915, p. 68.

*Hab.* Tasmania :—N. W. Coast (type, Petterd). South Australia :—10 to 22 fathoms, Spencer and St. Vincent Gulfs; 130 fathoms, Cape Jaffa; 200 fathoms, Beachport (Verco). Western Australia:—100 fathoms, ninety miles west of Eucla (Verco). The locality of Amboina given by Rousseau is of course wrong.

EPIDEIRA QUOYI *Des Moulins.*

"Une espèce avec des taches quadrilatères pres des sutures," Quoy and Gaimard, Zool. Astrolabe, ii., 1833, p. 525.

*Pleurotoma monile* Kiener, Coq. Viv., 1840, p. 52, pl. xv., fig. 3.

*Clavatula monile* Tryon, Man. Conch., vi., 1884, p. 232, pl. vii., fig. 96 (not *Pleurotoma monile* Brocchi, Conch. foss. subapenn., ii., 1814, p. 432).

*Pleurotoma quoyi nom. mut.* Des Moulins, Act. Soc. Linn. Bordeaux, xii., 1842, p. 167. *Id.* Weinkauff, Conch. Cab., 1876, p. 101, pl. xxii., fig. 2. *Id.* Watson, Chall. Rep. Zool., xv., 1886, p. 304.

*Drillia quoyi* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 170.

This smooth species has been confused by Reeve and subsequent writers with another form *(E. philipineri)*, beaded along the suture and beneath the fasciole.

*Hab.* Victoria:—Western Port (type, Astrolabe); Apollo Bay, Warnambool (Pritchard). Tasmania:—38 to 40 fathoms, off East Moncœur Island ("Challenger").

EPIDEIRA SCHOUTANICA *May.*

*Drillia schoutanica* May, Proc. Roy. Soc. Tasm., 1910 (1911), p. 391, pl. xiv., fig. 17. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxvi., 1913, p. 73.

*Hab.* Tasmania:—80 fathoms, Schouten Island (type, May); Bass Strait ("Endeavour"). South Australia:—365 fathoms, Cape Martin (self).

EPIDEIRA STRIATA *Gray.*

(Plate xliii., figs. 18, 19, 20.)

*Clavatula striata* Gray, King's Survey, ii., 1827, Appendix p. 485.

*Pleurotoma owenii* Reeve, Conch. Icon., i., 1843, pl. ix., fig. 70. *Id.* Weinkauff, Conch. Cab. 1876, p. 98, pl. xxi., fig. 5. *Id.* Watson, Chall. Zool. Rep., xv., 1886, p. 312.

*Drillia oweni* Angas, Proc. Zool. Soc., 1876, p. 202.

*Surcula oweni* Brazier, Journ. of Conch., vi., 1889, p. 70.

*Hab.* N.S.Wales:—2 to 10 fathoms, Port Jackson ("Challenger"); Ballina (self).

EPIDEIRA TORQUATA *sp. nov.*

(Plate xliii., fig. 21.)

*Pleurotoma philipineri* Tryon, Man. Conch., vi., 1884, p. 167, pl. xxxiv., fig. 82. *Id.* Kobelt, Conch. Cab., 1887, p. 227, pl. xli., fig. 17 (not *Pleurotoma philipineri* Tenison Woods).

Shell small; ovate-lanceolate; turreted. Colour ochraceous-yellow, irregularly spotted with white. On the subsutural ridge are large square spots, spaced at six to a whorl, and alternating with dark chestnut spots. Whorls seven and a half. Suture impressed. Protoconch of a whorl and

a half, smooth, and slightly bulbous. Fasciole impressed, distinct, bounded on each side by a stout ridge, having prominent tubercles arranged about twelve to a whorl. Anterior to these on the last whorl are seven prominent spiral cords, the interstices of which carry one or two minute threads. All these are crossed by fine growth lines. Sinus rather wide and shallow. Lip simple and thin. Pillar slightly twisted. Length 20 mm., breadth 8 mm.

This is distinguished from *E. quoyi* by beaded lyræ, and from *E. philipineri* by smaller size, more slender shape, fewer beads to a whorl, and fewer, wider-spaced spirals. Apparently Beddome substituted this for *E. philipineri* when he sent a parcel of Tasmanian shells to Tryon for illustration in the Manual. Instead of the usual interpretation of a single species, Tryon recognised three species, as I do, in this group; but under the name of *monile* he figured *quoyi*, *philipineri* he called *quoyi*, and *torquata* he figured as *philipineri*.

*Hab.* Tasmania:—Port Arthur (type, Mawle).

### Epideira xanthophæs *Watson.*

*Pleurotoma xanthophœs* Watson, Chall. Zool. Rep., xv., 1886, p. 282, pl. xxvi., fig. 1.

*Hemipleurotoma tasmanica* May, Proc. Roy. Soc. Tasm., 1910 (1911), p. 391, pl. xiii., fig. 16.

*Hab.* N. S. Wales:—30 to 35 fathoms, off Sydney Heads (type of *xanthophœs*, Challenger). Tasmania:—40 fathoms, Schouten Island (type of *tasmanica*, May).

### Bathytoma *Harris and Burrows.*

*Bathytoma* Harris and Burrows, Eocene and Oligocene Paris, 1891, p. 113, new name for *Dolichotoma* Bellardi, Mon. terz. Piem., 1875, p. 229, type *Pleurotoma cataphracta* Brocchi (not *Dolichotoma* Hope, 1839). *Id.* Tate, Proc. Roy. Soc. N.S.W., xxxi., 1898, p. 398.

*Megasurcula* Casey, Trans. St. Louis Acad., xiv., 1904, p. 147.

*(?) Cryptoconus* Koenen, Palæontographica, xvi., 1867, p. 167, type *Pleurotoma filosa* Lamarck. *Id.* Dall, Proc. Nat. U.S. Museum, liv., 1918, p. 325.

From the Australian Tertiary beds, Messrs. Dennant and Kitson catalogue[21]: *Bathytoma paracantha* T. Woods, *fontinalis* Tate, *decomposita* Tate, *angustifrons* Tate, and *pritchardi* Tate.

### Bathytoma agnata *Hedley and Petterd.*

*Bathytoma agnata* Hedley and Petterd, Rec. Austr. Mus., vi., 1906, p. 220, pl. xxxvii., fig. 3.

*Hab.* N.S.Wales:—250 fathoms, off Sydney (type, self).

[21] Dennant and Kitson—Rec. Geol. Survey Victoria, i., 1903, p. 96.

BATHYTOMA HECTORGUIA *Verco.*

*Drillia hectorguia* Verco, Trans. Roy. Soc. S.A., xxxi., 1907, p. 215, text figs. 2, 3.

*Hab.* South Australia:—104 fathoms, off Neptune Islands (Verco).

BORSONIA *Bellardi.*

*Borsonia* Bellardi, Bull. Soc. Geol. de France, x., 1838, p. 30, type *Borsonia prima* Bellardi.

From the Australian Tertiary, Professor R. Tate described the following:—*Borsonia balteata, otwayensis, polycesta,* and *protensa.*

BORSONIA CEROPLASTA *Watson.*

*Borsonia ceroplasta* Watson, Chall. Rep. Zool., xv., 1886, p. 368, pl. xviii., fig. 2. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 328.

*Hab.* South Australia:—300 fathoms, Cape Jaffa (Verco).

AWATERIA *Suter.*

*Awateria* Suter, N.Z. Geol. Surv., Pal. Bull. No. 5, Pt. I., 1917, p. 57, type *Awateria streptophora* Suter.

In general shape and sculpture the type of this genus is reminiscent of *Arcularia*, the protoconch is comparatively large; the fasciole runs between the wreath of subsutural nodules and the upright ribs; the canal is short, wide, and effuse. From *Epideira*, to which it seems to be related, the larger protoconch, few and rapidly increasing whorls, subcylindrical form and shallow sinus of *Awateria* readily distinguish it. Hitherto the genus has only been known from the Pliocene of New Zealand. Now it is proposed to utilise *Awateria* for the reception of *Pleurotoma challengeri* Smith, a recent deep water species from off Sydney.

AWATERIA CHALLENGERI *Smith.*

*Pleurotoma (Drillia) challengeri* Smith, Proc. Zool. Soc., 1891, p. 438, pl. xxxiv., fig. 7. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxvi., 1903, p. 22.

*Hab.* N.S.Wales:—410 fathoms, off Sydney (type, "Challenger"); 300 fathoms, off Sydney (self).

AWATERIA CROSSEI *Smith.*

*Pleurotoma (Drillia) crossei* Smith, Proc. Zool. Soc., 1891, p. 439, pl. xxxiv., fig. 8.

*Hab.* N.S.Wales:—410 fathoms, off Sydney (type, "Challenger").

This classification of *crossei*, *hoylei*, and *watsoni* is merely tentative. Specimens of these species are not available for study, and their illustrations are not satisfactory.

AWATERIA HOYLEI *Smith.*

*Pleurotoma (Drillia) hoylei* Smith, Proc. Zool. Soc., 1891, p. 439, pl. xxxiv., fig. 9.

*Hab.* N.S.Wales:—410 fathoms, off Sydney (type, "Challenger").

AWATERIA WATSONI *Smith.*

*Pleurotoma (Drillia) watsoni* Smith, Proc. Zool. Soc., 1891, p. 439, pl. xxxiv., fig. 10.

*Hab.* N.S.Wales:—410 fathoms, off Sydney (type, "Challenger").

MITRITHARA *gen. nov.*

Shell small, solid, biconical to cylindro-fusiform. Whorls four. Protoconch blunt. Colour white or buff, uniform or spotted with brown. Sculpture—close revolving cords, sometimes decussated with radial riblets. No varix, lip thin, sinus evanescent, columella incrassate, with an indistinct single or double plication. Canal wide and short, throat lyrate within. Type, *Columbella alba* Petterd.

A characteristic member of this genus is the tertiary fossil *Mitra daphnelloides* Tenison-Woods,[22] from Muddy Creek, Victoria. This was afterwards transferred by Tate and Cossmann to *Mitromorpha*.[23] The figure of the tertiary fossil *Cordieria conospira* Tate,[24] suggests that it may belong here also. The recent African species *Mitromorpha volva* Sowerby,[25] is probably co-generic.

Probably *Mitrithara* is related to *Antimitra*.[26] I have not the means to institute a comparison, but understand from Mr. Iredale that he considers them distinct.

MITRITHARA ALBA *Petterd.*

(Plate xliii., fig. 22.)

*Columbella alba* Petterd, Journ. of Conch., ii., 1879, p. 104. *Id.* Kobelt, Conch. Cab., iii., 1897, p. 288. *Id.* Tate, Journ. Roy. Soc. N.S.W., xxxi., 1897, p. 397.

*Mitromorpha alba* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1904, pp. 372, 455. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 328.

*Mitromorpha flindersi* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1899, p. 104, pl. viii., fig. 6, and xviii., 1906, p. 51.

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[22] Tenison-Woods—Proc. Linn. Soc. N.S.W., iv., 1880, p. 7, pl. ii., fig. 3.

[23] Tate—Journ. Roy. Soc. N.S.W., xxxi., 1897, p. 397; Cossmann—Essai Pal. Comp., vii., 1906, p. 224.

[24] Tate—Journ. Roy. Soc. N.S.W., xxxi., 1898, p. 396.

[25] Sowerby—Marine Shells of South Africa, 1892, p. 7, pl. i., fig. 16.

[26] Iredale—Proc. Mal. Soc., xii., 1917, p. 329.

Messrs. Pritchard and Gatliff, having overlooked Petterd's name when they re-described his species, afterwards proposed to reject it on the ground of preoccupation by Jeffreys. But the *nomen nudum* used by Jeffreys[27] was *Fusus albus*, upon which Petterd's *Columbella alba* does not infringe.

*Hab.* Tasmania:—Blackmans Bay (type, Petterd); King Island (May). Victoria:—Flinders (Gatliff). South Australia:—60 fathoms, St. Vincent Gulf; 90 fathoms, Cape Borda; 200 fathoms, Beachport; St. Francis Island (Verco).

MITRITHARA ANGUSTA *Verco.*

*Mitromorpha angusta* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 329, pl. xxvii., figs. 4, 5.

*Hab.* South Australia:—110 fathoms, Beachport (type); 55 fathoms, Cape Borda (Verco).

MITRITHARA AXICOSTATA *Verco.*

*Mitromorpha axicostata* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 330, pl. xxviii., fig. 4.

*Hab.* South Australia:—104 fathoms, Neptune Island (type); 110 fathoms, Beachport; 130 fathoms, Cape Jaffa (Verco).

MITRITHARA AXISCALPTA *Verco.*

*Mitrithara alba* var. *axiscalpta* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 329.

*Hab.* South Australia:—St. Vincent Gulf; 55 fathoms, Cape Borda; 110 fathoms, Beachport (Verco).

MITRITHARA COLUMNARIA *sp. nov.*

(Plate xliii., fig. 23.)

Shell rather large and thin, regularly fusiform. Colour pale yellow-orange, with a zone of alternate brown and buff beneath the suture. Whorls eight, of which three are included in the protoconch. Suture impressed. Sculpture:—Radials entirely absent; spirals amount to thirty-two on the last whorl and to ten on the penultimate; the summit of the whorl is crowned by a strong cord followed by a corresponding sulcus, thence the spirals diminish to the periphery, where they are small and crowded, with another change the base and snout are occupied by eight broad and widely spaced spirals. Lip incomplete in the specimen examined; the columella has two low folds. Length 13 mm., breadth 5 mm.

This species stands near to *M. alba*, than which *M. columnaria* is of more slender proportions, thinner, longer, and with more numerous, finer spirals.

*Hab.* Tasmania:—100 fathoms, Cape Pillar (type, W. L. May and self).

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[27] Jeffreys—Ann. Mag. Nat. Hist., viii., 1841, p. 165.

MITRITHARA COSTIFERA *May*.

*Mitromorpha costifera* May, Proc. Roy. Soc. Tasm., 1919, p. 56, pl. xiv., fig. 2.

*Hab.* Tasmania:—40 fathoms, Thouin Bay (type, May).

MITRITHARA INCERTA *Pritchard* and *Gatliff*.

*Mangelia incerta* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xiv., 1902, p. 181, pl. ix., fig. 1, and xviii., 1906, p. 50.

*Mitromorpha incerta* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 330.

*Hab.* Victoria:—Western Port (type, Gatliff). South Australia:—St. Vincent Gulf to St. Francis Island (Verco).

MITRITHARA MULTICOSTATA *May*.

*Mitromorpha multicostata* May, Proc. Roy. Soc. Tasm., 1910 (1911), p. 394, pl. xv., fig. 22.

*Hab.* Tasmania:—100 fathoms, Cape Pillar (type, May).

MITRITHARA PAUCILIRATA *Verco*.

*Mitromorpha paucilirata* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 332, pl. xxvii., figs. 8, 9.

*Hab.* South Australia:—90 fathoms, Cape Jaffa (type); 62 fathoms, Cape Borda; 104 fathoms, Neptune Island; 110 fathoms, Beachport (Verco).

Var. CRASSILIRATA *Verco*.

Verco *op. cit.*, p. 333.

*Hab.* South Australia:—56 fathoms, Cape Borda (type, Verco).

MITRITHARA PAULA *Verco*.

*Mitromorpha paula* Verco, Trans. Roy. Soc. S.A., xxxiii., p. 331, pl. xxviii., fig. 5.

*Hab.* South Australia:—St. Vincent Gulf; 22 fathoms, Backstairs Passage (Verco).

Var. LEUCA *Verco*.

Verco *op. cit.*

*Hab.* South Australia:—45 fathoms, Neptune Islands; 130 fathoms, Cape Jaffa; 110 fathoms, Beachport; 62 fathoms, Cape Borda (Verco).

MITRITHARA PROLES *sp. nov.*

(Plate xliii., fig. 24.)

Shell small, rather thin, ovate-fusiform. Colour buff, clouded with pale brown on the periphery. Whorls six, including two of the protoconch. Sculpture:—The whole shell is over-run with spiral flat-topped cords, which become gradually smaller and closer on approaching the anterior end; twenty-five of these occur on the last whorl, of which eight ascend the penultimate; the radials are curved delicate riblets, tapering upwards, and vanishing before reaching the summit of the whorl; these riblets disappear on the last whorl; the penultimate carries about twenty-five. Aperture wide; sinus a slight sigmoid flexure, the outer lip thin, curved forward; deep within are fifteen short spiral lyræ; two small plications on the columella; canal short and broad. Length 6 mm., breadth 2·7 mm.

This form was at first[28] mistaken for *M. alba* It is, however, much nearer to the fossil *M. daphnelloides*, of which it may be a variety, differing by a more pointed protoconch, less prominent plications on the columella, and finer, closer riblets.

*Hab.* N.S.Wales:—80 fathoms, 22 miles east of Narrabeen (type); 100 fathoms, Port Macquarie (self); 50 fathoms, Cape Three Points ("Thetis"). Victoria:—80 fathoms, Gabo Island ("Endeavour").

INQUISITOR *Hedley.*

*Inquisitor* Hedley, Journ. Roy. Soc. N.S.W., li., 1918, p. M. 79. Type, *Pleurotoma sterrha* Watson; *Drillia auctorum* in part (not *Drillia* Gray, Ann. Nat. Hist., i., 1838, p. 28).

The group here discussed has hitherto been called "Drillia," but examination shows that name to be inapplicable. By original usage, the type being *umbilicata*, *Drillia* was applied to an African group already named *Clavatula* by Lamarck.[29] Having later realised that this African group was already provided with a name,[30] Gray deflected "Drillia" for service in another direction. In this resurrected existence *Drillia* has been improperly employed for an Indo-Pacific group.

Compared with *Clavatula* the shell of *Inquisitor* is less massive, but more long and slender, with a spire taller in proportion. Radial sculpture is usually dominant in *Inquisitor*, where the grooved fasciole runs rather closer to the suture, and where the aperture in aged specimens is sometimes a little contracted by inflection of the outer lip. There is rarely a false umbilicus. The operculum of *Inquisitor* is lanceolate with the nucleus apical, instead of medio-lateral, as in *Clavatula*.

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[28] Hedley—Rec. Austr. Mus., vi., 1907, p. 298.

[29] Maltzan—Jahrb. deut. malak. Gesell., x., 1883, p. 121, pl. iii., fig. 5. Dall—Proc. U.S. Nat. Mus., liv., 1918, p. 324.

[30] Gray—Ann. Mag. N. Hist. (2), vii., 1851, p. 337, and Syst. Arrang. Moll. Brit. Mus., 1856, p. 8.

The shell reported by Brazier[31] as *Drillia alabaster* var. is here described as *I. flindersianus*.

*Drillia exarata* Reeve was identified by Sowerby[32] from South Australia. It has been indicated[33] that this species is American, not Australian.

*Drillia crenularis* Lamk. was identified by Pritchard and Gatliff from Portland, Victoria.[34] Confirmation of this doubtful record would be acceptable

*Drillia pulillus* Reeve, recorded by Brazier[35] from Cape York, is here described as *I. granobulteatus* Hedley.

*Drillia pseudocarinata* Reeve was recorded by Tenison-Woods[36] from King Island. It has not since been recognised.

*Drillia sinensis* Hinds was reported by Brazier[37] from Cape Grenville, Queensland. His specimens prove to be *I. sterrha* Watson.

*Drillia vexillum* Reeve was reported by Angas[38] from Middle Harbour, N.S.Wales. This is an American, not an Australian species.

*Drillia weldiana* Tenison-Woods, described as from Tasmania, has been noted as a synonym of the foreign *D. fucata* Reeve.[39]

INQUISITOR CORIORUDIS *sp. nov.*

(Plate xliii., fig. 25.)

Shell lanceolate, subturreted, spire slender and tall. Whorls ten, of which two constitute the protoconch. Suture deeply impressed. Colour olive-buff, with irregular tawny dashes. Epidermis thin and fibrous. Sculpture:—The earlier whorls have a double row of prominent peripheral beads, arranged about ten to a whorl; by interposition of additional spirals each double bead extends into a short oblique nodose rib; below the suture is an indefinite band, followed by a distinct and excavate fasciole; the latter is sculptured with fine lunate striæ; on the last whorl anterior to the fasciole are about twenty-three prominent but irregular spiral cords, some of which are rendered nodulous by passing over the ribs. Aperture:—Outer lip sharp and simple; sinus wide and V-shaped; columella coated with a thin callus. Length 23 mm., breadth 7 mm.

This species has a general resemblance to *I. coxi*, but is a more slender form, having both radial and spiral sculpture more prominent.

*Hab.* N.S.Wales:—300 fathoms, 27 miles east of Sydney (type, self).

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[31] Brazier—Proc. Linn. Soc. N.S.W., i., 1876, p. 154.
[32] Sowerby—Proc. Mal. Soc., ii., 1896, p. 24.
[33] Hedley—Proc. Linn. Soc. N.S.W., xxxviii., 1913, p. 312.
[34] Pritchard and Gatliff—Proc. Roy. Soc. Vict., xii., 1900, p. 172.
[35] Brazier—Proc. Linn. Soc. N.S.W., i., 1876, p. 152.
[36] Tenison-Woods—Proc. Roy. Soc. Tasm., 1877, p. 27.
[37] Brazier—Proc. Linn. Soc. N.S.W., i., 1876, p. 152.
[38] Angas—Proc. Zool. Soc., 1867, p. 203.
[39] Hedley—Proc. Roy. Soc. Tasm., 1902 (1903), p. 77.

INQUISITOR COXI *Angas.*

(Plate xliii., fig. 26.)

*Drillia coxi* Angas, Proc. Zool. Soc., 1867, p. 113, pl. xiii., fig. 15. *Id.* Tenison-Woods, Proc. Roy. Soc., Tasm., 1877, p. 27. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 368. *Id.* Hedley, Mem. Austr. Mus., iv., 1903, p. 388. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 301.

*Drillia agnewi* Tenison-Woods, Proc. Roy. Soc. Tasm., 1878 (1879), p. 36. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 368, pl. xxiv., fig. 29. *Id.* Hardy, Proc. Roy. Soc. Tasm., 1915, p. 62.

*Drillia trailli* Pritchard and Gatliff (not Hutton), Proc. Roy. Soc. Vict., xviii., 1906, p. 49.

The colour is buff, sometimes dashed with chestnut. The example figured is from Sydney Harbour, and is 33 mm. long.

*Hab.* N.S.Wales:—Port Jackson, type of *coxi* (Angas); Jervis Bay (Brazier); 22 fathoms, Manning River entrance; 63 to 75 fathoms, Port Kembla ("Thetis"). Victoria:—Portland (Mrs. A. F. Kenyon). Tasmania:—Table Cape (Atkinson).

INQUISITOR CRASSICINGULATUS *Schepman.*

*Mangilia crassicingulata* Schepman, Siboga Exped. Monogr., xlixe., 1913, p. 434, pl. xxix., fig. 1. *Id.* Odhner, Kungl. Sv. Vet. Akad. Handl. Bd., lii., 1917, p. 52.

*Hab.* Western Australia:—11 fathoms, 45 miles W.S.W. of Cape Jaubert (Mjöberg).

INQUISITOR FIBRATUS *sp. nov.*

(Plate xliii., fig. 27.)

Shell solid lanceolate. Colour uniform dull white. Whorls ten. Sculpture:—Except where interrupted by the spirals, the shell is overrun by very close microscopic radial lamellæ, a series of which rise along the suture and curl into arched scales; these crowning the summit of each whorl give a distinct recognition mark to the species; this crest of scales is underlined by a stout undulating cord; though excavate out of the general contour the fasciole is not well differentiated, it is sculptured by radial lamellæ and traversed by two or three spiral threads; on the last whorl, anterior to the fasciole, run about sixteen rather flat-topped spiral lyræ, about twice their own breadth apart, between which one or two minute interstitial threads may occur; on the penultimate are four such spirals; wave-like ribs are set at about thirteen to a whorl, interrupted by the fasciole, but continuing to the base and ascending the spire perpendicularly. Aperture:—The mouth is narrow; canal short and wide; sinus deeply U-shaped; margin everted. Behind the aperture is a varical swelling, followed by a narrow pocket groove, beyond which again

the outer lip is turned inwards, giving rise to a short free edge. The callus on the columella is a thick sheet, the anterior edge of which is free from the preceding whorl. Length 16 mm., breadth 5·5 mm.

This species is closely allied to and perhaps a variety of *I. spaldingi* Brazier. The differences are that *fibratus* is longer and narrower, with more ribs and more prominent spirals, and especially with a secondary sculpture of minute hair lines which develop into a subsutural row of close minute prickles.

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (type, self); Cape York; Darnley Island (Brazier); Facing Island; Port Curtis (Kesteven).

INQUISITOR FLINDERSIANUS *sp. nov.*

(Plate xliv., fig. 28.)

*Pleurotoma alabaster* var. Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 154 (not *P. alabaster* Reeve).

Shell rather large and solid, slender fusiform. Whorls eleven. Colour ochraceous-salmon, with a pale zone on the shoulder. Sculpture:—Fasciole slightly excavate, crossed by crescentic lines, and traversed by fine threads; ribs discontinuous, oblique, widely spaced, round-backed, bolder on the upper whorls, disappearing on the ventral side of the last whorl, but re-appearing on the dorsal; set at twelve to a whorl; spirals are flat-topped cords which over-ride the ribs—about twenty-two on the last whorl and five or seven on the upper whorls; their furrows are crossed by microscopic hair lines, and often traversed by an interstitial thread. Aperture:—Mouth narrow; varix broad and low, about its own breadth within the edge of the free flap which stretches across the mouth; sinus deep, oblique, narrowed at the entrance; columella straight; inner lip with a raised margin; canal short, open. Length 31 mm., breadth 11 mm.

*Hab.* Queensland:—10 fathoms, Mapoon (type); 4 to 14 fathoms, Albany Passage; 5 to 8 fathoms, Murray Island (self); 30 fathoms, Darnley Island (Brazier).

INQUISITOR FORMIDABILIS *sp. nov.*

(Plate xliv., fig. 29.)

Shell large but comparatively thin, fusiform, subturreted, sharply pointed; spire produced; base contracted. Whorls thirteen. Colour grey-buff, maculated with chestnut at the sutures. Sculpture:—The radials are oblique, wide-spaced, low peripheral nodular riblets, ten on the penultimate, and eleven on the last whorl; on the earlier whorls the ribs ascend the spire perpendicularly and continuously, but on the lower whorls they are less developed and less regular; there is a secondary sculpture of fine radial threads which sometimes crowd the interstitial spaces of the spirals; on the last whorl are about thirty-two broad spiral cords, and on the penultimate ten; in their interstices one or more spiral

threads may arise; a funicular rib on the anterior end of the shell encloses a small false umbilicus; the fasciole is broad, and is appressed to the suture; it is smooth save for crescentic growth lines. Aperture:—The sinus is wide and V-shaped; the outer lip is arched forwards, and the free sharp edge is bent inwards a little towards the aperture; opposite the base of the canal is a stromboid inflection; canal short, wide, and sharply recurved; columella overspread with a thick callus rising in a low tubercle opposite the sinus. Length 46 mm., breadth 15 mm.

This is a member of the group of *Drillia flavidula*. In size and contour it resembles the Japanese *Drillia jeffreysi* Smith,[40] but the Queensland shell is narrower, the nodular ribs not so prominent, and the spirals are finer and closer.

*Hab.* Queensland:—10 fathoms, off Mapoon (type, self); Keppel Bay (Brazier).

INQUISITOR GLAUCE *Dall.*

(Figure 5.)

*Pleurotoma (Drillia) ventricosa* Smith, Ann. Mag. Nat. Hist., (6), ii., 1888, p. 301.

*Drillia ventricosa* Hedley, Proc. Linn. Soc. N.S.W., xxxiii., 1908, p. 487, pl. x. *bis*. fig. 3 (not *Pleurotoma ventricosa* Deshayes, 1833).

*Pleurotoma glauce* Dall, Proc. U.S. Nat. Mus., liv., 1918, p. 333.

*Hab.* Queensland:—Between Percy Island and the mainland (Macgillivray).

Fig. 5.

INQUISITOR GRANOBALTEUS *sp. nov.*

(Plate xliv., fig. 30.)

*Drillia putilla* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 152 (not *Pleurotoma putillus* Reeve).

Shell rather thin, elongate-fusiform, turreted. Whorls ten. Sutures channeled. Colour pale buff, with rust dots between the peripheral nodules, and irregular rust streaks and splashes elsewhere. Sculpture:—On the summit of each whorl is a collar of two strong spirals; besides, the whole surface is over-run with fine, close, flat-topped spiral threads, amounting to about fifty-five on the last whorl; along the shoulder runs a row of upright tubercles, twice as high as broad, and more than their own breadth apart—twenty-two on the penultimate whorl, most distinct on the earlier whorls, and gradually fading till they almost disappear on

[40] Smith—Ann. Mag. Nat. Hist., (4), xv., 1875, p. 417.

the last whorl; from these evanescent tubercles faint radials descend to the base; the trough of the deeply excavate fasciole is crossed by fine crescentic radial threads. Aperture:—Lip thin, its edge not reflected, without internal lyræ; sinus wide and shallow; canal straight and produced. Length 26 mm., breadth 9 mm.

Specimens of *Pleurotoma tuberculata* Gray, from Bombay and Karachi, differ from *T. granobalteus* by more prominent sculpture, and especially by the beads on the base. According to Melvill's figure the new species resembles *P. nelliæ*, but differs in colour and the larger number of peripheral beads.

*Hab.* Queensland:—Karumba, mouth of Norman River (type); Forsyth Island and Mapoon, all in the Gulf of Carpentaria (self); 11 fathoms, Cape York (Brazier).

INQUISITOR HEDLEYI *Verco.*

*Drillia hedleyi* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 302, pl. xxvi., fig. 6.

*Hab.* South Australia:—200 fathoms, Beachport (type); 90 fathoms, Cape Jaffa; 104 fathoms, Neptune Islands (Verco).

INQUISITOR HOLOLEUCUS *Odhner.*

*Drillia hololeuca* Odhner, Kungl. Sv. Vet. Akad. Handl., lii., 1917, p. 58, pl. ii., fig. 61.

This has a general resemblance to *I. fibratus*, but differs in detail of sculpture.

*Hab.* Western Australia:—12 fathoms, 45 miles W.S.W. of Cape Jaubert (Mjöberg).

INQUISITOR IMMACULATUS *Tenison-Woods.*

(Plate xliv., fig. 31.)

*Mangelia immaculata* Tenison-Woods, Proc. Roy. Soc. Tasm., 1875 (1876), p. 142, and 1877 (1879), p. 27. *Id.* Hardy, Proc. Roy. Soc. Tasm., 1815, p. 66.

*Drillia immaculata* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 369.

*Drillia gabrieli* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1899, p. 100, pl. viii., fig. 1.

My figure is from a specimen 17 mm. in length, which Mr. W. L. May kindly compared with the type for this purpose of illustration. The type itself is bleached and worn, and has lost details of sculpture. Victorian specimens are buff, but one taken off Sydney Heads by Mr. J. Brazier is chocolate-brown.

*Hab.* Tasmania:—King Island, type of *immaculata* (Tasmanian Museum). Victoria:—5 fathoms, Western Port, type of *gabrieli* (Gabriel). N.S.Wales:—Off Sydney Heads (Brazier).

INQUISITOR LACERTOSUS *sp. nov.*

(Plate xliv., fig. 32.)

Shell solid, biconical. Whorls six, of which two compose the protoconch. Colour salmon-buff, ribs cream; a few scattered ferruginous dots and large square ferruginous spots in the intercostal spaces. Ribs low, tubercular, projecting in an acute angle from the shoulder; nine on the last whorl. Sometimes elevated crescentic lamellæ extend from these ribs to the suture; other lamellæ continue as fine growth lines across the shell. The spirals are faint threads, evanescent on the shoulder and prominent on the snout. Of these there are about forty on the last whorl, twelve of which are posterior to the angle. Aperture simple and unfinished in the only example available. Length 13 mm., breadth 7 mm.

*Hab.* N.S.Wales:—50 fathoms, off Point Plomer (type, self).

INQUISITOR LASSULUS *sp. nov.*

(Plate xliv., fig. 33.)

*Drillia varicosa* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 152 (not *Pleurotoma varicosa* Reeve).

Shell of moderate size, solid, rather glossy, fusiform. Colour buff, chequered with ochre-red, disposed irregularly, though alternate segments of red and buff on the subsutural cord seems a constant feature; usually the snout, the fasciole, and a narrow supra-basal zone are buff, while the intercostal spaces and a broad basal zone are red. Whorls ten, of which two include the protoconch. Sculpture:—A prominent undulating cord runs beneath the suture, and is followed by a rather narrow fasciole with a median groove; the ribs may, or may not, swell at irregular intervals into varices—they are stout, perpendicular, discontinuous, persistent on the last whorl, and reach to the base; they are set at about eleven to the whorl; spirals are flat-topped cords, their width apart, more prominent in the interspaces than on the ribs, their interstices and sometimes themselves crossed by a secondary sculpture of fine radial threads, excluding the subsutural spiral; there are fourteen on the last whorl, and two or three on the earlier whorls. Aperture:—Mouth narrow, last varix twice its breadth behind the edge of the lip; sinus open, wide, and deep; columella straight, inner lip with a raised margin; canal produced and recurved. Length 15 mm., breadth 5 mm.

Compared with *I. varicosa*, for which Brazier mistook it, this species is shorter, stouter, and with less and fewer varices. *I. sterrha* is twice the size, more brightly and differently coloured, with broader, rounder, and closer ribs. *I. spaldingi* is more like it, but apart from the different colour scheme. *I. lassulus* is smaller, with more prominent ribs, and may be distinguished especially by the conspicuous and chequered subsutural ridge.

*Hab.* Queensland:—8 fathoms, Weary Bay (type); 15 fathoms, Palm Island (self); 20 fathoms, Darnley Island; 16 fathoms, York Island; 11 fathoms, Palm Island (Brazier); 20 fathoms, between Cairns and Endeavour Reef (McCulloch).

INQUISITOR LATERCULATUS *Sowerby*.

*Pleurotoma laterculata* Sowerby, Proc. Zool. Soc., 1870, p. 253. *Id.* Smith, Zool. Coll. "Alert," 1884, p. 38, pl. iv., fig. E. *Id.* Watson, Chall. Zool. Rep., xv., 1886, p. 303, pl. xviii., fig. 5.

*Drillia laterculata* Schepman, Siboga Exped., Monogr. xlixe., 1913, p. 408.

*Hab.* Queensland:—12 to 20 fathoms, Port Molle (Coppinger); 25 fathoms, west of Cape York ("Challenger").

INQUISITOR MASTERSI *Brazier*.

*Drillia mastersi* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 153. *Id.* Hedley, Rec. Austr. Mus, iv., 1901, p. 121.

*Pleurotoma (Drillia) essingtonensis* Smith, Ann. Mag. Nat. Hist., (6), ii., 1888, p. 303.

*Drillia essingtonensis* Hedley, Proc. Linn. Soc. N.S.W., xxxiii., 1908, p. 487, pl. viii., fig. 8.

The type shells of *I. mastersi* are immature; being concealed in the Chevert collection under an unpublished name, they escaped recognition when I formerly examined the collection.

*Hab.* Queensland:—8 fathoms, Warrior Island, Torres Straits (type, Brazier); 4 to 14 fathoms, Albany Passage; 7 to 10 fathoms, Port Curtis; Mast Head Reef (self). Northern Territory:—Port Essington, type of *essingtonensis*.

INQUISITOR METCALFEI *Angas*.

(Plate xliv., figs. 34, 35.)

*Drillia metcalfei* Angas, Proc. Zool. Soc., 1878, pp. 113, 203, pl. xiii., fig. 16. *Id.* Brazier, Rep. Austr. Mus. for 1881 (1883), p. 22. *Id.* Brazier, Journ. of Conch., vi., 1889, p. 70.

*Pleurotoma metcalfei* Smith, Proc. Zool. Soc., 1879, p. 189. *Id.* Watson, Chall. Rep. Zool., xv., 1886, p. 304.

The type is a faded shell in the British Museum. This species varies in size, colour, and sculpture. It reaches a length of 20 mm., with nineteen tubercules on the penultimate whorl, and is usually dark chestnut picked out with buff on the shoulder nodules. The operculum (fig. 35) is unguiculate with a terminal nucleus.

*Hab.* N. S. Wales:—Port Jackson (type, Angas); Port Stephens (Brazier).

INQUISITOR MULTILIRATUS *Smith*.

(Figure 6.)

Fig. 6.

*Pleurotoma (Drillia) multilirata* Smith, Ann. Mag. Nat. Hist., (4), xix., June 1877, p. 496.

*Drillia multilirata* Hedley, Mem. Austr. Mus., iv., 1903, p. 389, text fig. 102 (not 103).

Herewith is figured a specimen from 300 fathoms, off Sydney, which is doubtfully ascribed to this species.

*Hab.* N.S.Wales:—Port Jackson (type, British Museum); 80 fathoms, 22 miles east of Narrabeen; 300 fathoms, 27 miles east of Sydney (self).

INQUISITOR PETILINUS *sp. nov.*

(Plate xliv., fig. 36.)

Shell lanceolate, sub-turreted, thin, surface smooth and glossy. Colour buff-yellow, with two zones of raw sienna, the one subsutural, the other peripheral. Whorls ten, of which two constitute the protoconch. Prominent round-backed ribs, arranged at ten to a whorl, follow each other irregularly up the spire. On the upper whorls the spirals are evanescent, and are represented by two or three beads on the ribs. On the last whorl there are about fifteen slight wide-spaced threads. Fasciole indistinct. Aperture—sinus semi-circular; lip simple, slightly bent inwards; canal short, slightly recurved. Length 12·5 mm., breadth 4·6 mm.

*Hab.* N. S. Wales:—Jervis Bay (type, Brazier).

INQUISITOR RADULA *Hinds*.

*Pleurotoma radula* Hinds, Proc. Zool. Soc., 1843, p. 38. *Id.* Hinds, Zool. "Sulphur," ii., 1844, p. 16, pl. v., fig. 9. *Id.* Reeve, Conch. Icon., i., 1845, pl. xxv., fig. 223.

*Drillia radula* Angas, Proc. Zool. Soc., 1867, p. 202. *Id.* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 153. *Id.* Schepman, Siboga Exped., Monogr. xlixe., 1913, p. 413. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 157.

*Turris radula* Cooke, Ann. Mag. Nat. Hist., (5), xvi., 1885, p. 34.

*I. radula* is closely related to the Sydney *I. metcalfei*, but is shorter, stouter, more solid, and more harshly sculptured.

*Hab.* Queensland:—20 to 30 fathoms, Darnley Island; 20 fathoms, Cape Grenville (Brazier); 7 to 10 fathoms, Port Curtis; 4 to 14 fathoms, Albany Passage (self).

INQUISITOR RADULÆFORMIS *Weinkauff (emend.)*

*Pleurotoma (Surgula) radulæformis* Weinkauff, Conch. Cab., 1876, p. 91, pl. xix., fig. 7, 8.

This species is unknown to Australian conchologists; apparently it resembles *I. metcalfei*. The type is probably in the Hamburg Museum.

*Hab.* Tasmania:—Bass Strait (type, Godeffroy Museum).

INQUISITOR SEXRADIATUS *Odhner.*

*Drillia sexradiatus* Odhner, Kung. Sv. vet. Akadem. Handl., lii., 1917, p. 57, pl. ii., fig. 59.

*Hab.* Western Australia:—8 fathoms, 45 miles W.S.W. of Cape Jaubert (Mjöberg).

INQUISITOR SPADIX *Watson.*

*Pleurotoma (Drillia) spadix* Watson, Chall. Rep. Zool., xv., 1886, p. 310, pl. xxvi., fig. 6.

*Drillia spadix* Hedley, Mem. Austr. Mus., iv., 1903, p. 388.

*Hab.* N.S.Wales:—35 fathoms, off Sydney (type, "Challenger"); 63 to 75 fathoms, Port Kembla ("Thetis"). Victoria:—80 fathoms, Gabo Island ("Endeavour").

INQUISITOR SPALDINGI *Brazier.*

*Drillia spaldingi* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 153. *Id.* Hedley, Rec. Austr. Mus., iv.. 1901, p. 122, pl. xvi., fig. 1.

An orange splash on the back of the last whorl is a useful recognition mark for this species.

*Hab.* Queensland:—11 fathoms, Bet Island; 30 fathoms, Darnley Island (Brazier).

INQUISITOR SPURIUS *nom. mut.*

*Pleurotoma tuberculata* Gray, Beechey's Voyage, 1839, p. 120. *Id.* Reeve, Conch. Icon., i., 1843, pl. ix., fig. 72. *Id.* Weinkauff, Conch. Cab., 1875, p. 40, pl. ix., figs. 1, 3. *Id.* Dunker, Index Moll. Mar. Jap., 1882, p. 20. *Id.* Watson, Chall. Rep. Zool., xv., 1886, p. 285. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 164 (not *Pleurotoma tuberculata* Pusch, Polens Palæontologie, 1837, p. 143, pl. xii., fig. 2, nor *Pleurotoma tuberculata* Anton, Verzeich. Conch., 1839, p. 72).

*Pleurotoma punctata* Reeve, Proc. Zool. Soc., 1845 (1846), p. 111. *Id.* Reeve, Conch. Icon., i., 1845, pl. xxi., fig. 18. *Id.* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 151 (not *Pleurotoma punctata* Schubert and Wagner, Conch. Cab., xii., 1829, p. 155).

*Hab.* Queensland:—20 to 30 fathoms, Darnley Island (Brazier). Arafura Sea ("Challenger").

INQUISITOR STERRHUS *Watson.*

*Pleurotoma sterrha* Watson, Journ. Linn. Soc., Zool., xv., 1881, p. 426. *Id.* Watson, Chall. Zool. Rep., xv., 1886, p. 305, pl. xxi., fig. 3. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxx., 1906, p. 534.

*Drillia sterrha* Schepman, Siboga Exped., Monogr. xlixe., 1913, p. 413.

*Pleurotoma torresiana* Smith, Zool. "Alert," 1884, p. 37, pl. iv., fig. D.

*Drillia torresiana* Melvill and Standen, Journ. Linn. Soc., Zool., xxvii., 1899, p. 156.

*Drillia sinensis* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 152 (not *Clavatula sinensis* Hinds).

This species is proposed as genotype of *Inquisitor*. A typical specimen which I dredged in the Gulf of Carpentaria is 39 mm. long and 13 mm. broad, with fourteen ribs on the last whorl. At Rat Island, Port Curtis, Dr. R. Pulleine obtained a variety which is more slender and closely ribbed, being 28 mm. long, 8 mm. broad, and has seventeen ribs on the last whorl.

*Hab.* Queensland:—3 to 12 fathoms, Cape York (type of *sterrhus*, "Challenger"); 7 to 9 fathoms, Friday Island (type of *torresiana*, "Alert"); Albany Passage (Haddon); Bowen (Haswell); Port Curtis (Pulleine); 5 to 8 fathoms, Mapoon; Murray Island; 15 fathoms, Palm Island (self); 13 fathoms, Cape Grenville (Brazier); between Cairns Reef and Endeavour Reef (McCulloch).

INQUISITOR SUAVIS *Smith.*

(Plate xliv., fig. 37.)

*Pleurotoma (Drillia) suavis* Smith, Ann. Mag. Nat. Hist., (6), ii., 1888, p. 305. *Id.* Dautzenberg, Proc. Malac. Soc., vi., 1904, p. 131 (not *Drillia suavis* Hervier, Journ. de Conch., xliii., 1895, p. 141).

*Drillia prosuavis* Hedley, Mem. Austr. Mus., iv., 1903, p. 339, text fig. 103, not 102.

A disputed point in nomenclature here involved was tried by a conchological jury. Though their verdict differs from my opinion, it is here dutifully accepted.

*Hab.* N.S.Wales:—41 to 50 fathoms, Cape Three Points ("Thetis"); 24 fathoms, Broughton Island (Museum Expedition). Victoria:—Western Port (Gabriel).

INQUISITOR TAYLORIANUS *Reeve.*

*Pleurotoma tayloriana* Reeve, Conch. Icon., i., 1846, pl. xl., fig. 152. *Id.* Melvill and Standen, Journ. of Conch., ix., 1898, p. 37.

*Drillia tayloriana* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 152. *Id.* Bœttger, Nachr. Malak. Gesell., xxvii., 1895, p. 6. *Id.* Melvill and Standen, Proc. Zool. Soc., 1901, p. 440. *Id.* Hidalgo, Revist. Acad. Cienc. Madrid, i., 1904, p. 334. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 159.

*Hab.* Queensland:—30 fathoms, Darnley Island (Brazier); 5 to 10 fathoms, Hope Island (self).

INQUISITOR VARICOSUS *Reeve.*

*Pleurotoma varicosa* Reeve, Conch. Icon., i., 1843, pl. xvi., fig. 141. *Id.* Reeve, Proc. Zool. Soc., 1843 (1844), p. 187. *Id.* Hidalgo, Revist. Acad. Cienc. Madrid, i., 1904, p. 334. *Id.* Schepman, Siboga Exped. Monogr., xlixe., 1913, p. 410. *Id.* Odhner, Kung. Sv. Vet. Akad. Handl. lii., 1917, p. 57, pl. ii., fig. 60.

Possibly this record is based on *I. sterrha.*

*Hab.* Western Australia:—12 fathoms, 45 miles W.S.W. of Cape Jaubert (Mjöberg).

AUSTRODRILLIA *Hedley.*

*Austrodrillia* Hedley, Journ. Roy. Soc. N.S.W., ii., 1918, p. M 79.

Shell small, very solid, subcylindrical or claviform. Sculpture of nodose ribs that do not attain the suture, and fine spiral threads which are most dense at the summit of the whorl. No epidermis. Protoconch of two smooth and elevate whorls. Aperture wide, without varix or internal armature. Outer lip simple. Sinus wide, U-shaped, its right margin resting on a massive insertion callus. Fasciole indistinguishable. Type *Pleurotoma angasi* Crosse, 1863.

This genus appears to be represented in South Africa by such forms as *Pleurotoma caffra* and *P. hottentota* Smith, and in New Zealand by *Drillia lyallensis* Murdoch.

AUSTRODRILLIA ACHATINA *Verco.*

*Drillia achatina* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 299, pl. xxvi., fig. 2.

*Hab.* South Australia:—20 fathoms, Newland Head (type); 40 fathoms, Beachport; 55 fathoms, Cape Borda (Verco).

AUSTRODRILLIA AGRESTIS *Verco.*

*Drillia agrestis* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 299, pl. xxvii., fig. 7.

*Hab.* South Australia:—40 fathoms, Beachport (type); 17 fathoms, Backstairs Passage (Verco).

AUSTRODRILLIA ANGASI *Crosse.*

(Plate xliv., figs. 38, 39.)

*Pleurotoma angasi* Crosse, Journ. de Conch., xi., 1863, p. 87, pl. i., fig. 5.

*Drillia angasi* Angas, Proc. Zool. Soc., 1867, p. 203. *Id.* Tryon, Man. Conch., vi., 1884, p. 187, pl. ix., fig. 37. *Id.* Brazier, Journ. of Conch., vi., 1889, p. 71. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxi., 1908, p. 375.

Tryon incorrectly united this with *A. beraudiana*, but they are clearly separable. *A. angasi* has the intercostal spaces coloured chocolate. *A. beraudiana* is a stouter, shorter shell, with fewer, more widely spaced ribs. In the British Museum seven specimens are marked as types of *A. angasi*.

This species does not occur in New Zealand. The name of *Austrodrillia rawitensis* is now proposed for a species from the Bay of Islands, which Mr. Suter has mistakenly figured and described[41] as *Drillia angasi*. The New Zealand species differs from the real *angasi* by shorter, broader form, orange-brown colour, shorter ribs, and deep conspicuous spiral grooves.

*Hab.* N.S.Wales:—Port Jackson (type, Angas); Catherine Hill Bay (R. L. Cherry); Gerringong and Wreck Bay (self). Victoria:—San Remo (Mrs. A. F. Kenyon).

### Austrodrillia beraudiana *Crosse.*

(Plate xlv., fig. 40.)

*Pleurotoma beraudiana* Crosse, Journ. de Conch., xi., 1863, p. 88, pl. i., fig. 6. *Id.* Weinkauff, Conch. Cab., 1876, p. 95, pl. xx., figs. 7, 8. *Id.* Tenison-Woods, Proc. Roy. Soc. Tasm., 1877 (1878), p. 27.

*Drillia beraudiana* Angas, Proc. Zool. Soc., 1867, p. 203. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 171.

*? Drillia tæniata* Tenison-Woods, Proc. Roy. Soc. Tasm., 1878 (1879), p. 36. *Id.* Hardy, *op. cit.*, 1915, p. 69.

In the British Museum seven specimens are marked as the types of *A. beraudiana*. By Pritchard and Gatliff *Drillia tæniata* Tenison-Woods is classed under *G. pictæ*, but by Tate and May under *A. beraudiana*.

*Hab.* N.S.Wales:—Port Jackson (type, Angas); Catherine Hill Bay (R. L. Cherry); Twofold Bay (self). Victoria:—Port Phillip and Western Port (Gabriel). Tasmania:—King Island (Tenison-Woods); East Coast (May).

### Austrodrillia dimidiata *Sowerby.*

*Drillia dimidiata* Sowerby, Proc. Malac. Soc., ii., 1896, p. 24, pl. xiii., fig. 2. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 297.

*Hab.* South Australia:—16 fathoms, Backstairs Passage (type); 19 fathoms, Yankalilla Bay; 40 fathoms, Beachport (Verco).

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[41] Suter—Man. N. Zealand Mollusca, 1913, p. 480, pl. 46, fig. 25.

AUSTRODRILLIA NENIA *Hedley.*

(Figure 7.)

Fig. 7.

*Drillia nenia* Hedley, Mem. Aust. Mus., iv., 1903, p. 387, text fig. 101. *Id.* Hedley, Rec. Austr. Mus., vi., 1905, p. 42. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 74. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxvi., 1913, p. 74.

*Austrodrillia nenia* May, Check List Mollusca, Tasmania, 1921, p. 76.

*Hab.* N. S. Wales:—24 fathoms, Port Stephens (type); 22 fathoms, Manning Head; 50 fathoms, Cape Three Points; 54 fathoms, Wata Mooli; 75 fathoms, Port Kembla ("Thetis"); 111 fathoms, Cape Byron (Halligan). Victoria:—40 fathoms, Ninety-mile Beach (Gatliff). South Australia:—200 fathoms, Beachport (Verco).

AUSTRODRILLIA SAXEA *Sowerby.*

*Drillia saxea* Sowerby, Proc. Malac. Soc., ii., 1896, p. 25, pl. iii., fig. 4. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., p. 304. *Id.* May, Proc. Roy. Soc. Tasm., 1910 (1911), p. 308. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxvi., 1913, p. 74.

*Hab.* South Australia:—St. Vincent Gulf (type); 40 to 200 fathoms, Beachport; 90 to 300 fathoms, Cape Jaffa; 55 fathoms, Cape Borda (Verco). Tasmania:—100 fathoms, Cape Pillar; 40 fathoms, Schouten Island (May). Victoria:—Wilson's Promontory (Gatliff and Gabriel).

AUSTRODRILLIA SUBLICATA *Verco.*

*Drillia sublicata* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 300, pl. xxvii., fig. 6.

*Hab.* South Australia:—40 fathoms, Beachport (type); 130 fathoms, Cape Jaffa (Verco).

## Sub-family CLAVATULINÆ.

MELATOMA *Swainson.*

*Melatoma* Swainson, Treatise Malacology, 1840, pp. 202, 342, text fig. 104; type *M. costata* Swainson. *Id.* Dall, Proc. U.S. Nat. Museum, liv., 1918, p. 317.

*Clionella* Gray, Proc. Zool. Soc., 1847, p. 153; type *Buccinum sinuatum* Born. *Id.* Stimpson, Am. Journ. Conch., i., 1865, p. 62, pl. ix., fig. 13, *radula*. *Id.* Bartsch, U.S. Nat. Mus. Bull., 91, 1915, p. 14.

Sir Joseph Verco observed[42] that the operculum of *Drillia harpularia* requires the transference of that species from *Turritinæ* to *Clavatulinæ*. Agreeable to the suggestions of Weinkauff and Verco, and pending further information on the opercular and other characters, the following Australian species are therefore tentatively grouped in a *Clavatuline* genus. *Drillia buchanani* Hutton, from New Zealand, may be included here.

*M. bednalli*, *eburnea* and *woodsi* are distinguished from the rest by a particularly glossy surface, and absence of the usual spirals. To these *Drillia lænis* Hutton, from south New Zealand, is related. To contain these I propose a new sub-genus—*Splendrillia*, with *M. woodsi* for type.

MELATOMA BEDNALLI *Sowerby*.

*Drillia bednalli* Sowerby, Proc. Malac. Soc., ii., 1896, p. 25, pl. iii., fig. 3. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 368. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 302.

*Hab.* South Australia:—St. Vincent Gulf (type); 20 fathoms, St. Francis Island (Verco).

MELATOMA DAMPIERIA *sp. nov.*

(Plate xlv., fig. 41.)

Shell slender lanceolate, long, and solid. Colour uniform livid-brown to russet-vinaceous. Whorls eleven, including a mucronate protoconch of two whorls. Sculpture:—Surface in general polished; the fasciole a broad and rather deeply sunken furrow, crossed by fine concentric growth lines, and traversed by a median sulcus; above it runs a prominent subsutural ridge; between the fasciole and the anterior end are twenty-two spiral grooves, which grow wider and deeper towards the base, and smaller and more crowded on the snout; the radial ribs are seventeen to a whorl, prominent on the shoulder, and gradually vanishing towards the base, higher on the penultimate, and decreasing towards the aperture. Aperture pyriform; lip simple; sinus U-shaped, rather large; a boss of callus near the insertion of the lip and a separate sheet of callus on the lower columella; canal short and wide. Length 30 mm., breadth 9 mm.

This species resembles *M. harpularia*, but is much larger, purplish in colour, with weaker radials but stronger spiral sculpture.

*Hab.* Western Australia:—Shark Bay (type in Macleay Museum).

MELATOMA DUPLARIS *sp. nov.*

(Plate xlv., fig. 42.)

Shell small, solid, lanceolate. Colour dull cream, with a faint dorsal zone of brown. Whorls eight, including a two-whorled protoconch. Sculpture:—The radials are smooth round-backed perpendicular ribs,

[42] Verco—Trans. Roy. Soc. S.A., xxxiii., 1909, p. 296.

truncated by a smooth and constricted fasciole, amounting to eleven on the penultimate; on the earlier part of the body-whorl these ribs are smaller and closer together than previously; half a whorl behind the aperture is a rough varix, beyond which the ribs cease; spirals—on the base are about a dozen fine grooves; between the suture and the fasciole is a spiral ridge which tends to break up into beads opposite the ribs. Aperture narrow; sinus C-shaped; a thick callus knob occurs at the right insertion. Length 8 mm., breadth 3 mm.

*Hab.* Queensland:—5 fathoms, off the Horsey River, Gulf of Carpentaria (type, self).

### Melatoma eburnea *sp. nov.*

(Plate xlv., fig. 43.)

Shell solid, glossy, cylindro-fusiform. Colour uniform ivory-yellow. Whorls seven, including a two-whorled dome-shaped protoconch. Suture impressed. Sculpture:—There are no spirals; the ribs are set about fourteen to a whorl—they start up suddenly, immediately below the contracted fasciole area, are prominent, perpendicular, wide-spaced, discontinuous, decreasing anteriorly, become obsolete on the last whorl, and vanish below the periphery. Aperture wide; no varix; lip simple; sinus deep, U-shaped, right insertion incrassate; throat smooth; inner lip overlaid with a thick polished callus; canal short and open. Length 10 mm., breadth 4 mm.

This is like *Drillia lævis* Hutton, but is much smaller, with sharper and more numerous ribs.

*Hab.* N.S.Wales:—55 fathoms, Wollongong ("Thetis"). Victoria:—80 fathoms, Gabo Island (type, "Endeavour").

### Melatoma gratiosa *Sowerby.*

*Drillia gratiosa* Sowerby, Proc. Malac. Soc., ii., 1896, p. 25, pl. iii., fig. 1.
*Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 302.

*Hab.* South Australia:—St. Vincent Gulf (type); 17 fathoms, Point Marsden; 22 fathoms, Kangaroo Island; 49 fathoms, Beachport (Verco).

### Melatoma harpularia *Des Moulins*

*Pleurotoma harpula* Kiener, Coq. Viv., 1840, p. 58, pl. xviii., fig. 3.

*Crassispira harpula* Menke, Yoldi Cat., 1853, p. 73 (not *Murex harpula* Brocchi, Conch. foss. subapenn., 1814, p. 421, pl. viii., fig. 12, nor *Pleurotoma harpula* Deshayes, Descrip. Coq. Foss. Paris, ii., 1834, p. 490, pl. lxvii., figs. 22, 23, 24).

*Pleurotoma harpularia* Des Moulins, Act. Soc. Linn. Bordeaux, xii., 1842, p. 162. *Id.* Reeve, Conch. Icon., i., 1843, pl. xv., fig. 124.

*Drillia harpularia* Angas, Proc. Zool. Soc. 1865, p. 159. *Id.* Tate, Trans. Phil. Soc. Adelaide, ii., 1879, p. 137. *Id.* Sowerby, Proc. Malac. Soc., ii., 1896, p. 24. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 170. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 296.

Since the type was obtained by the "Astrolabe," it probably came from King George Sound. The Adelaidean example differs from the type by smaller size and tawny colour.

A relation of this species is *Drillia æmula* Angas, really a native of Stewart Island, New Zealand, but erroneously ascribed by its author to N.S.Wales.[43]

*Hab.* Victoria:—Portland (Pritchard). South Australia:—St. Vincent Gulf to St. Francis Island (Verco). Western Australia:—King George Sound (Tate). New Holland:—Tigre Bay (British Museum).

MELATOMA LYGDINA *sp. nov.*

(Plate xlv., fig. 44.)

Shell thin, lanceolate, subturreted, spire produced, base constricted. Colour uniform yellowish-gray. Whorls exceeding ten. Sculpture:—The fasciole is only indicated by the even truncation of the ribs; surface smooth, so that a few microscopic growth scratches are only just perceptible; the ribs are prominent, short, oblique, wave-shaped, spaced about twelve to a whorl; just behind the aperture the ribbing becomes irregular, the place of a final rib being taken by three small riblets which coalesce above. Aperture pyriform; sinus U-shaped, rather deep. Length 27 mm., breadth 8·5 mm.

This species is represented by a single specimen with an imperfect apex.

*Hab.* Victoria:—150 to 200 fathoms, off Gabo Island ("Endeavour").

MELATOMA SPADICINA *sp. nov.*

(Plate xlv., fig. 45).

Shell large, solid, elongate-conic, regularly tapering. Colour cinnamon-brown. Whorls ten. Suture linear. Sculpture:—Below the suture runs an elevated spiral cord; in the intervals between the ribs and on the base are fine spiral threads; the fasciole area is excavate, ornamented with fine spiral threads crossed by concentric striæ; the ribs are fourteen to a whorl, oblique, round-backed, commencing below the fasciole and vanishing on the base. Aperture pyriform; insertion of lip ascending above the plane of the suture, and supported by a prominent callus knob; inner lip a smear of callus; sinus rather wide and shallow; canal short and open. Length 25 mm., breadth 8 mm.

[43] Hedley—Proc. Linn. Soc. N.S.W., xxxviii., 1913, p. 311.

The material for this description has been gathered among storm drift on ocean beaches, and is worn or broken. This species has a general resemblance to *M. harpularia*, but differs by being larger, of more slender proportions, more contracted at the base, with less prominent radials and with spiral threads.

*Hab.* N. S. Wales :—Woolgoolga (type, C. Laseron); Little River (Brazier); Catherine Hill Bay (R. L. Cherry); Thirroul (Mrs. N. Barnett).

### Melatoma subviridis *May.*

*Drillia subviridis* May, Proc. Roy. Soc. Tasm., 1910 (1911), p. 392, pl. xiv., fig. 18.

*Hab.* Tasmania :—9 fathoms, Derwent Estuary (type); 40 fathoms, Schouten Island (May). Victoria :—80 fathoms, Gabo Island ("Endeavour").

### Melatoma woodsi *Beddome.*

*Drillia woodsi* Beddome, Proc. Roy. Soc. Tasm., 1882 (1883), p. 167. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 368. *Id.* Hedley, Mem. Austr. Mus., iv., 1903, p. 388. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 301.

*Drillia howitti* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1899, pp. 101, 172, pl. viii., fig. 2. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxv., 1901, p. 722.

*Hab.* Tasmania :—D'Entrecasteaux Channel (type, Beddome); Fredrick Henry Bay (May). Victoria :—Gippsland Coast (Pritchard). South Australia :—Middleton; 300 fathoms, Cape Jaffa; 200 fathoms, Beachport (Verco). N.S.Wales :—Sydney; 22 fathoms, Manning Heads; 24 fathoms, Broughton Islands; 50 fathoms, Botany Heads ("Thetis").

### Var. acostata *Verco.*

Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 301.

*Hab.* South Australia :—200 fathoms, Beachport; 130 fathoms, Cape Jaffa (Verco).

### Turricula *Schumacher.*

*Turricula* Schumacher, Essai Nouv. Syst. Vers. test., 1817, p. 217, type *T. flammea* Schumacher=*Murex tornatus* Dillwyn, Chemnitz, Conch. Cab., iv., pl. cxliii., fig. 1336-8. *Id.* Iredale, Proc. Malac. Soc., xii., 1917, p. 324.

*Surcula* H. and A. Adams, Gen. Rec. Moll., i., 1853, p. 88.

The brothers Adams introduced *Surcula* to replace Schumacher's name, on the mistaken plea that it was preoccupied by Klein. References to *Turricula* previous to 1817 are invalid for nomenclature, and the

general use of the name in the *Mitridæ* was unfortunate. In size and contour the shell resembles that of *Turris*, but is broader. The peripheral keel is beaded either in the young stage, as in the genotype, or throughout life. A superficial resemblance to *Gemmula* is acquired by the beaded periphery, but the position of the sinus differentiates it from the genera. Eydoux and Souleyet have shown that the operculum of *Pleurotome nodifere* has a lateral nucleus, thus conveying the genus to the *Clavatulinæ*. *Turris conspicua* and *T. altispira*,[44] Tasmanian Tertiary fossils, may belong to this genus.

TURRICULA JAVANA *Linne.*

*Mitra javanus* Linne, Syst. Nat., xii., 1767, p. 1221. *Id.* Hanley, Ips. Linn. Conch., 1885, p. 299.

*Surcula javana* Standen and Leicester, Ceylon Pearl Oyster Reports, xxxviii., 1906, p. 287.

*Drillia (Surcula) javana* Shirley, Proc. Roy. Soc. Queensland, xxix., 1917, p. 112 (not *P. javana* of Gmelin, Reeve, &c.)

*Murex turris* Gmelin Syst. Nat., xiii., 1791, p. 3543.

*Pleurotoma contorta* Perry, Conchology, 1811, pl. xxxii., fig. 1.

*Pleurotoma nodifera* Lamarck, An. s. vert., vii., 1822, p. 96. *Id.* Crouch, Introduc. Lam. Conch., 1827, p. 33, pl. xvii., fig. 4. *Id.* Kiener, Coq. Viv., Pleurotome, 1840, p. 22, pl. xii., fig. 1. *Id.* Deshayes, An. s. vert., 2 ed., ix., 1843, p. 353. *Id.* Reeve, Conch. Icon., i., 1843, pl. iv., fig. 28. *Id.* Souleyet, Zool. "Bonite," ii., 1852, p. 620, pl. xliv., figs. 6-7-8.

I have seen no Australian example of this species.

*Hab.* Queensland:—Thursday Island (Shirley).

TURRICULA LEPTA *Watson.*

*Pleurotoma (Surcula) lepta* Watson, Journ. Linn. Soc., xv., 1881, Zool. p. 391. *Id.* Watson, Chall. Rep. Zool., xv., 1886, p. 288, pl. xviii., fig. 7.

*Hab.* South-west Australia:—1,950 fathoms, S. lat. 53.55, E. long. 108.35 ("Challenger").

CLAVUS *Montfort.*

*Clavus* Montfort, Conch. Syst., ii., 1810, p. 435, pl. cix., type *Clavus flammulatus* Montfort = *Strombus lividus* Linne = *Clavatula echinata* Lamarck. *Id.* Cossman, Essai. Paleoconch, ii., 1896, p. 86. *Id.* Dall, Proc. U.S. Nat. Mus., liv., 1918, pp. 315, 324.

*Clavicantha* Swainson, Treat. Malac., 1840, pp. 155, 314, type selected by Herrmansen, Ind. Gen. Malac., i., 1846, p. 246, *Pleurotoma echinata* Lamarck.

*Tylotia* Melvill, Proc. Malac. Soc., xii., 1917, p. 160, type *Strombus canaliculatis* Bolten=*Clavatula auriculifera* Lamarck.

[44] May—Proc. Roy. Soc. Tasm., 1921, pp. 11, 12, pl. iv., figs. 7, 8.

The shell of *Clavus* is characterised by the following features:—Flat indefinite fasciole, indicated only by the curve of growth lines; a smooth subulate protoconch. An insinuation of the outer lip, near the base, like that of *Strombus;* a major sculpture of prominent arched scales on the shoulder, and a minor sculpture of dense, microscopic, waved, spiral striæ. The animal was figured by Quoy and Gaimard in the atlas of the zoology of the Astrolabe.[45] An operculum of *C. vidualoides* Garrett from Cebu, Phillipines, is here shown (Pl. xlv., fig. 51) to have a medio-lateral nucleus.

The specific identity of the genotype *Strombus lividus* was left in doubt by Hanley[46] when he studied the Linnean collection, and it has not been decided since. I therefore wrote to Dr. Nils H. Odhner, of the National Museum of Sweden, inquiring if he could obtain any information on the subject. He kindly replied (21st February, 1918) that he had in turn referred to Professor Wiren, in charge of the museum at Uppsala, where the Linnean types are, who answered: "A specimen labelled by Thunberg as *Strombus lividus*, Mus. Gust. Ad., is present here, and it may be considered with great probability to be the same as Linne described in the Mus. Ludovicæ Ulricæ, 1764." This type specimen was submitted to Dr. Odhner, who described it as corresponding in shape, size, and colour to *Pleurotoma echinata*, as figured by Reeve.[47] The identifications of *Strombus* by Chemnitz and Solander[48] are thus shown to be erroneous.

### Clavus æneus *sp. nov.*

(Plate xlv., fig. 46.)

Shell small, solid, cylindro-fusiform, polished, constricted at the sutures. On decollate specimens six whorls remain, divided by linear sutures. Colour amber-brown, with ochraceous reflections. Sculpture:—Ribs prominent, arcuate, each slightly overhanging the one below, seven to a whorl, consecutive on the spire, smaller on the last whorl where they do not reach the base; on the base and snout are six revolving threads. Aperture rather wide, flanked by a tall and thick varix; edge of lip thin, insinuate at the base; columella perpendicular and concave; canal short and wide; sinus wide and shallow; a prominent callus knob at the lip insertion. Length 11 mm., breadth 4 mm.

This resembles *Clavus fusconitens* Sowerby, but is much smaller, proportionately narrower, with fewer and more prominent ribs.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

### Clavus candidulus *sp. nov.*

(Plate xlv., fig. 47.)

*Clathurella quisqualis* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 157 (not *Clavatula quisqualis* Hinds, Zool. Sulphur, ii., 1844, p. 19, pl. vi., fig. 5).

[45] Quoy and Gaimard—Pl. xxxv., fig. 9.
[46] Hanley—Ips. Linn. Conch., 1855, p. 278.
[47] Reeve—Conch. Icon., i., 1843, pl vi., fig. 48.
[48] Iredale—Proc. Malac. Soc., xii., 1916, p. 192.

Shell small, subcylindrical, solid, and very glossy. Colour ice-white. Whorls seven, inclusive of the protoconch—a small smooth dome of two whorls. Sculpture:—The only spirals are four lines on the snout; ribs broad and low, crowded above, and becoming more spaced as growth proceeds; evanescent on the last half whorl, discontinuous from whorl to whorl, amounting to eight on the penultimate, sometimes lightly impressed and sometimes interrupted by the fasciole, which is not otherwise apparent. Suture sinuate. Aperture fusiform; outer lip expanded and bent inwards, thickened on its outer edge, insinuate at the base; sinus deeper than the canal, with a slightly raised rim, the entrance contracted; on the inner lip is a callus sheet, thickening at the posterior angle to a tubercle; canal a mere notch. Length 11 mm., breadth 2·5 mm.

This species has a general resemblance to *Pleurotoma persica* Smith, but that differs by larger size, furrows on the base, and a constricted fasciole.

*Hab.* Queensland:—10 fathoms, Cape Sidmouth (type, A. U. Henn); 4 to 14 fathoms, Albany Passage (self); 20 fathoms, Darnley Island (Brazier).

### Clavus costatus *sp. nov.*

(Plate xlv., figs. 48, 49.)

Shell small, ovate-elongate, solid and compact. Colour dull white, the summit buff-yellow, base anterior to the insertion of the lip pale orange-yellow; along the suture are irregular chocolate splashes. Whorls seven, including a protoconch of two depressed whorls. Sculpture:—There are eight thick and prominent ribs to a whorl; these descend the shell vertically and continuously; on the base they are slightly flexed, and each terminates anteriorly in a bead; both ribs and interstices are engraved by very minute and dense spiral striæ; the snout is traversed by a few coarse spirals, which cease at the bead row; on the smooth glossy protoconch is a pronounced median keel, which ends abruptly at the topmost rib. Aperture pyriform, produced into a short, wide, open canal; behind the lip is a prominent varix which, rising above the suture, fills an intervariceal space on the preceding whorl; a substantial callus sheet spreads on the inner lip, and a tubercle is formed near the right insertion; just in front of the canal is a slight insinuation of the outer lip. Length of specimen drawn 6 mm., breadth 3 mm.; another specimen, length 9 mm., breadth 3·5 mm.

*Hab.* Queensland:—12 fathoms, Darnley Island (Brazier).

### Clavus cygneus *Melvill* and *Standen.*

*Drillia nitens* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 154 (not *Clavatula nitens* Hinds, Zool. Sulphur, ii., 1844, p. 20, pl. vi., fig. 17).

*Drillia cygnea* Melvill and Standen, Journ. of Conch., viii., 1897, p. 379, pl. xi., fig. 82. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 137.

*Hab.* Queensland:—25 to 30 fathoms, Darnley Island; 11 fathoms, Palm Island (Brazier); 5 to 10 fathoms, Hope Island (self).

CLAVUS EXASPERATUS *Reeve.*

(Plate xlv., fig. 50.)

*Pleurotoma exasperata* Reeve, Proc. Zool. Soc., 1843, p. 32. *Id.* Reeve, Conch. Icon., i., 1843, pl. ii., fig. 8. *Id.* Weinkauff, Conch. Cab., 1876, p. 54, pl. xii., figs. 1, 3. *Id.* von Marteus, Fauna Mauritius, 1880, p. 226.

*Drillia exasperata* Smith, Fauna Maldive, Laccadive, ii., 1903, p. 603.

*Drillia auriculifera* var. *exasperata* Bouge and Dautzenberg, Journ. de Conch., xli., 1913, p. 136.

*Pleurotoma exigua* Hombron and Jacquinot, Voy. Pole Sud., iv., Zool., 1853, p. 111., pl. xxv., figs. 21, 22 (not *P. exigua* C. B. Adams, Panama Shells, 1852, p. 142.

*Drillia livida* Hedley, Proc. Linn. Soc. N.S.W., xxxiv., 1909, p. 453.

*Hab.* Queensland:—Torres Straits (type of *exigua*, Hombron and Jacquinot); 5 to 10 fathoms, Hope Islands (self). Northern Territory:—Darwin.

CLAVUS UNDATUS *Hedley.*

*Aspella undata* Hedley, Rec. Austr. Mus., vi., 1907, p. 294, pl. lv., fig. 15.

*Hab.* N. S. Wales:—80 fathoms, Narrabeen (type); 100 fathoms, Wollongong (self).

CLAVUS VIDUUS *Reeve*, var. VIDUALOIDES *Garrett.*

(Plate xlv., fig. 51.)

*Drillia vidualoides* Garrett, Proc. Acad. Sci. Philad., 1873, p. 217, pl. ii., fig. 28. *Id.* Melvill and Standen, Journ. of Conch., viii., 1897, p. 397. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 143.

*Hab.* Queensland:—Murray Island, Lizard Island, and Hope Island beaches (self).

IREDALEA *Oliver.*

*Iredalea* Oliver, Trans. N.Z. Inst., xlvii., 1914 (1915), p. 538, type *I. subtropicalis* Oliver.

*Zafra* H. Adams, Proc. Zool. Soc., 1872, p. 14, and subsequent authors, but not *Zafra* A. Adams, Ann. Mag. Nat. Hist. (3), vi., 1860, p. 331.

The name of *Zafra* was in 1872 transposed by Henry Adams to a turrid species incompatible with the columbelloid type for which the genus had been erected twelve years earlier. May it be that our Turridæ is a polymorphic assemblage in which some pyrenoid elements have been unnaturally included? It is noteworthy how persistently authors have grouped the smaller Pyrenidæ with Turridæ. Chenu referred *Macteola segesta* to *Columbella*, Petterd referred *Mitrithara alba* to *Columbella*, Hinds

referred *Anarithma metula* to *Clavatula*, Pease referred *Seminella varia* to *Cythara*, and von Martens referred *Columbella marquesa* to *Daphnella*. Dall noted that *Savatieria*, though referred to the Pleurotomidæ, is obviously an *Anachis*. Tate remarked that the Tasmanian fossil *Mangelia gracilirata* belongs to *Columbella*. The species of *Iredalea* have been distributed through several genera. Their very solid but narrow shell is sculptured by numerous slender and continuous riblets; a brown band on the periphery is a usual feature.

Besides those species here recorded as Australian I suggest the inclusion in this genus of the following exotic forms:—*Pleurotoma acuminata* Mighels, *Drillia minutissima* Garrett, *D. pygmæa* Dunker, *D. themeropsis* Melvill and Standen, *D. xanthoporphyria* Melvill and Standen, *Mangilia thalycra* Melvill and Standen, and *M. theoteles* Melvill and Standen.

### Iredalea macleayi *Brazier.*

*Clathurella macleayi* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 157.
*Id.* Hedley, Rec. Austr. Mus., iv., 1901, p. 122, pl. xvi., fig. 2.

*Hab.* Queensland:—25 to 30 fathoms, Darnley Island; 13 fathoms, Princess Charlotte Bay; 20 fathoms, Cape Grenville; 11 fathoms, Cape York (Brazier); 11 fathoms, Cape Sidmouth (Henn); 7 to 10 fathoms, Port Curtis; 15 fathoms, Palm Island; 5 to 10 fathoms, Hope Island; 4 to 14 fathoms, Albany Passage (self).

### Iredalea pupoidea *H. Adams.*

*Zafra pupoidea* H. Adams, Proc. Zool. Soc., 1872, p. 14, pl. iii., fig. 27.
*Pleurotoma pupoidea* Melvill and Standen, Journ. of Conch., vii., 1895, p. 14.
*Drillia pupoidea* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 134.
*Mangilia victor* Sowerby, Proc. Malac. Soc., i., 1894, p. 45, pl. iv., fig. 9.

*Hab.* Queensland:—Beach, Murray Island (self).

### Iredalea subtropicalis *Oliver.*

(Plate xlv., fig. 52.)

*Iredalea subtropicalis* Oliver, Trans. N.Z. Inst., xlvii., 1914 (1915), p. 538, pl. ix., fig. 34.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self); Barrier Reef, off Cairns (D. Pitt).

### Scrinium *gen. nov.*

Shell small, oblong, rounded at each end. Whorls few. Protoconch low, dome-shaped. Colour yellow and brown, uniform or variegated. No differentiation of fasciole area. Sculpture of obscure radial ribs and faint spiral grooves. Aperture rather wide, smooth within, the sinus shallow, lip simple, canal short and wide, with an everted margin; columella concave and twisted. Type *Mitromorpha brazieri* Smith.

Confusion was introduced into this section of conchology when E. A. Smith first referred an Australian species to *Mitromorpha*.[49] Iredale recently drew attention[50] to the accumulation of errors which has enveloped *Mitromorpha*. It seems likely that "*Mitromorpha*," as typified by *M. filosa*, does not even belong to the turrid group. A survey of those Australian species which have been associated with that genus leads me to conclude that *Mitromorpha* does not occur in Australia. For them the following re-arrangement is now proposed.

*Mitromorpha brazieri* Smith, for which *Scrinium* is now suggested, *Bathytoma sarcinula* Hedley, and *B. biconicum* Hedley, are re-classified under the generic name of *Teleochilus*.

*Mitromorpha cassandra* Hedley, *M. pallidula* Hedley, and *M. solida* May, are now transferred to *Prosipho* Thiele.

*Columbella alba* Petterd, *Mangilia incerta* Pritchard and Gatliff, *Mitra daphnelloides* Tenison Woods, *Mitromorpha augusta* Verco, *M. axicostata* Verco, *M. costata* May, *M. multicostata* May, *M. paucilirata* Verco, and *M. paula* Verco, are now all assembled in a new genus *Mitrithara*.

To *Scrinium* I would also refer *Bela neozelanica* Suter,[51] from North New Zealand.

SCRINIUM BRAZIERI *Smith*.

*Mitromorpha brazieri* Smith, Proc. Zool. Soc., 1891, p. 487, pl. xl., fig. 2.
*Id.* Sowerby, Proc. Malac. Soc., ii., 1896, p. 31.

*Apaturris brazieri* Hedley, Journ. Roy. Soc. N.S.W., li., 1918, p. M 80.

*Hab.* N.S.Wales:—8 fathoms, Watsons Bay (type, Brazier). South Australia:—St. Vincent Gulf (Sowerby).

SCRINIUM FURTIVUM *sp. nov.*

(Plate xlv., fig. 53.)

Shell small, very solid, ovate-oblong, rounded at either end. Whorls six, two forming the low protoconch, convex, a little constricted below the suture, which is deeply impressed. Colour vinaceous-buff, sometimes with a white zone its own breadth below the suture, and half-a-dozen evenly spaced narrow white lines on the remainder of the whorl; the columella terra-cotta, and the throat orange-cinnamon with a buff zone. Sculpture:—In general the shell is smooth; on the upper whorls about ten low nodular ribs are scarcely distinguishable; lines of growth are marked by numerous irregular scratches; a few evanescent spiral grooves may or may not appear on the body whorl. Aperture wide, smooth within, outer lip simple, the sinus represented by an arch of the summit; inner lip a thin callus, which at the basal axis meets at an acute angle a thicker callus rising to form a reflected border to the short and very broad canal; columella vertical, flattened, and a little twisted. Length 7·5 mm., breadth 3 mm.

[49] Smith—Proc. Zool. Soc., 1891, p. 487, pl. xl., fig. 2.
[50] Iredale—Proc. Malac. Soc., xii., 1917, p. 328.
[51] Suter—Proc. Malac. Soc., viii., 1908, p. 185, pl. vii., fig. 17.

*Hab.* N. S. Wales:—80 fathoms, 22 miles off Narrabeen (self). Victoria:—80 fathoms, Gabo Island (type, "Endeavour").

Scrinium gatliffi *Verco.*

*Drillia gatliffi* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 312, pl. xxviii., fig. 9.

*Mangilia gatliffi* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxxiii., 1910, p. 89.

*Hab.* South Australia:—17 fathoms, Backstairs Passage (type); 15 fathoms, St. Francis Island; 55 fathoms, Cape Borda (Verco). Victoria:—8 fathoms, Inverloch (Baker).

Scrinium impendens *Verco.*

*Mangilia impendens* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 313, pl. xxvii., fig. 3.

*Hab.* South Australia:—St. Vincent Gulf (type); 14 fathoms, Ardrossan; 24 fathoms, Newland Head (Verco).

## Sub-family MANGILIINÆ.

Eucithara *Fischer.*

*Mangelia* Hinds, Proc. Zool. Soc., 1843, p. 45, and Reeve, Conch. Icon., iii., 1846 (not *Mangelia* Risso, 1826).

*Cythara* Adams, Genera Rec. Moll., i., 1853, p. 98, and of most subsequent writers (not *Cythara* Schumacher, 1817).

*Eucithara* Fischer, Man. Conch., 1883, p. 593, type *Mangelia stromboides* Reeve, Conch. Icon., iii., 1846, pl. v., fig. 33.

Because *Cithara* was by Klein applied in 1753 to the genus now known as *Harpa*, Dr. Paul Fischer rejected *Cythara*, of Schumacher, for a Turrid genus, and substituted *Eucithara*. It was properly answered by Dr. Dall[52] that Klein, being a pre-linnean writer, cannot contend against Schumacher's orthodox nomenclature. But though Fischer's argument fails, his verdict does not; for Schumacher's *Cythara* was not a Turrid. His genotype is a species figured by Chemnitz,[53] which Bolten in 1798 called *Pterygia subterranea*, which Schumacher himself renamed *Cythara striata* in 1817, and which Lamarck in 1822 named *Cancellaria citharella*. As long ago as 1847 Gray[54] agreed to exclude it from the Turridæ. Dr. Pfeiffer[55] identified the Chemnitzian figure as *Strombus plicatus*, a conclusion endorsed by Deshayes.[56] By Sowerby[57] this was regarded as

[52] Dall—Bull. Mus. Comp. Zool., xviii., 1889, p. 100.
[53] Chemnitz—Conch. Cab., iv., 1780, pl. cxlii., fig. 1330.
[54] Gray—Proc. Zool. Soc., 1847, p. 135.
[55] Pfeiffer—Krit. Reg. Conch. Cab., 1840, p. 38.
[56] Deshayes—An. s. vert., ix., 1843, p. 407.
[57] Sowerby—Conch. Illustr. Cancellaria, 1841, p. 8.

an *Oniscia*. The colour markings and the spiral grooves on the anterior part of the shell of Chemnitz favour the reference of *Cythara* to *Strombus* rather than, as by Smith,[58] to *Mangelia lyra* Reeve, or *M. funiculata* Reeve. Even if it be granted that Schumacher's *Cythara* is really a Turrid, it is a species unknown to modern conchology, and the genus has no substantial basis. Tryon[59] has stated that *Otocheilus* is "*Cythara*," in which case it would take precedence of the name here employed, but Dall[60] regards it as absolutely synonymous with *Lyria*. The genus *Conopleura* Hinds (type *C. striata* Hinds, 1844), is probably a deepwater representative of *Eucithara*.

The genus *Eucithara* seems to be a constant associate of reef corals. Typically it is a rather solid turrited-fusiform shell, sculptured by bold longitudinal ribs, over-run by dense spiral threads, and decussated by an even finer radial striation. The aperture is as long, or longer, than the spire, fortified externally by a stout varix which ascends the previous whorl, includes a semi-circular sinus, and extends a free edge over the mouth. Within the lip are a series of short entering ridges, and the columella bears a corresponding series of deeply entering horizontal bars.

Corrections here offered of the "Chevert" records are as follows:—*Mangelia ponderosa* of Brazier (not Reeve) is here regarded as *E. guntheri* Sowerby; his *M. goodalli* is *E. cylindrica*; his *balteata* is *coronata*; his *maculata* is *alacris*; and his *pessulata* is *celebensis*.

EUCITHARA ABYSSICOLA *Reeve*.

*Mangelia abyssicola* Reeve, Conch. Icon., iii., 1846, pl. v., fig. 30. *Id.* Proc. Zool. Soc., 1846, p. 62.

*Cythara abyssicola* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 160.

*Mangelia vittata* Reeve, Conch. Icon., iii., 1846, pl. vii., fig. 53, pl. viii., fig. 65.

*Cythara vittata* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 161.

*Mangilia (Cythara) vittata* Odhner, Kung. Sv. Vet. Akademiens Handlingar, lii., 16, 1917, p. 58, pl. ii., fig. 62 (not *Mangelia vittata* Hinds, Zool. "Sulphur," 1844, p. 26, pl. ix., fig. 3; nor *M. vittata* Reeve, Conch. Icon., iii., pl. ii., fig. 14=*M. obesa* Reeve).

*Pleurotoma (Cithara) biclathrata* Souverbie, Journ. de Conch., xx., 1872, p. 363, and xxi., 1873, p. 59, pl. iv., fig. 4. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 157.

*Pleurotoma (Glyphostoma) exquisita* Smith, Ann. Mag. Nat. Hist. (5), x. 1882, p. 305.

*Raphitoma exquisita* Boettger, Nachr. Mal. Gesell., xxvii., 1895, p. 63.

[58] Smith—Journ. Linn. Soc. Zool., xii.,1876, p. 538.
[59] Tryon—Man. Conch., vi., 1884, p. 362.
[60] Dall—Trans. Wagn. Inst., iii., 1890, p. 85.

*Hab.* Queensland:—10 to 20 fathoms, Darnley Island; Warrior Island (Brazier); 4 to 14 fathoms, Albany Passage; 5 to 10 fathoms, Hope Island; 15 fathoms, Palm Islands (self). Western Australia:—12 fathoms, 45 miles W.S.W. Cape Jaubert (Mjöberg).

### Eucithara alacris *sp. nov.*

(Plate xlvi., figs. 54, 55.)

*Cythara maculata* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 160 (not *Mangelia maculata* Reeve).

Shell slender, fusiform, glossy. Whorls seven, of which one and a half compose a small, smooth, helicoid protoconch. Colour white, ornamented with four to six pale orange bands, appearing only in the interstices, not on the ribs; these sometimes coalesce from above and below, thus replacing spiral by radial painting. Sculpture:—Radial ribs are well developed, projecting as an angle on the shoulder, continuing from suture to base, and amounting to ten on the last whorl; the spiral threads are sharp on the upper whorls, where they are decussated by radial striæ; gradually they vanish, till on the middle of the last whorl the surface seems smooth to the eye, and only a few engraved spirals can be found with a lens. Aperture:—The mouth is linear; the slight varix encloses a small sinus, and extends in a narrow free edge; inner lip well developed, with fifteen cross-bars; beneath the varix are fourteen short entering plicæ. Length 11 mm., breadth 4 mm.

This species is allied to *E. angela*, but is smaller, more pointed at the ends, with fewer ribs, and not so sharply angled at the shoulder.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (type); Lizard Island; Bar of Annam River; Dunk and Palm Islands (self); 30 fathoms, Darnley Island (Brazier).

### Eucithara angela *Adams* and *Angas.*

*Cithara angela* Adams and Angas, Proc. Zool. Soc., 1863 (1864), p. 419, pl. xxxvii., fig. 4.

*Cithara balansai* Crosse, Journ. de Conch., xxi., 1873, pp. 65, 131, pl. v., fig. 5.

*Mangilia (Cithara) balansai* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 157.

Of three specimens which I collected in Torres Straits in 1907 one has eight and another fourteen ribs, thus easily linking *angela* with *balansai*, and supporting the above novel synonymy.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

EUCITHARA ANGULATA *Reeve.*

*Mangelia angulata* Reeve, Conch. Icon., iii., June 1846, pl. viii., fig. 62. *Id.* Reeve, Proc. Zool. Soc., August 1846, p. 64. *Id.* Tryon, Man. Conch., vi., 1884, p. 266, pl. xxiv., fig. 28. *Id.* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 13.

*Cythara angulata* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 160.

The shell thus labelled in the "Chevert" collection does not agree with Reeve's figure.

*Hab.* Queensland:—5 fathoms, Cape York (Brazier).

EUCITHARA ARENIVAGA *sp. nov.*

(Plate xlvi., figs. 56, 57.)

Shell solid, biconical, slightly constricted around the upper part of each whorl. Whorls nine. Colour lavender-gray, with a broad peripheral band of buff descending the spire, and on the last whorl underlined by a single or double chocolate line; lip buff; interior ochraceous brown. Protoconch of two small helicoid whorls. Sculpture:—The first whorl is keeled, and developes small radial ribs; on subsequent whorls the ribs amount to about ten, not continuous from one whorl to the next, bent, and thickened on the shoulder, thence quickly tapering to the suture, continuing in the opposite direction to the base of the last whorl; the whole shell is over-run by microscopic spiral threads, alternately larger and smaller. Aperture:—The mouth is narrow, oblong, protected by a stout varix which ascends the previous whorl, and in which is excavated a shallow semicircular sinus; the lip has a very narrow free margin, within which are about eight small inconspicuous teeth; the columella is overlaid by a thick callus sheet with a definite margin, across it extend ten plications; canal a mere notch. Length 12 mm., breadth 4·5 mm.

This is related to the New Caledonian *E. guestieri*, but differs in colour, the general tone being slate, not brown; in being more slender, and having the ribs further apart. There is a general resemblance to *E. reticulata*, but *E. arenivaga* is smaller, with fewer and more widely spaced ribs. Both extremities of *arenivaga* taper more, and the body whorl is proportionately smaller.

*Hab.* Queensland:—Cape Flattery (type), several specimens crawling in pools and over wet sand north of the headland; bar of Annam River (self); Cape York (Brazier).

EUCITHARA BASEDOWI *Hedley.*

*Eucithara basedowi* Hedley, Trans. Roy. Geogr. Soc. S.A., xviii., 1918, p. 279, pl xli., fig. 4.

*Hab.* Western Australia:—Buccaneer Archipelago (type, Dr. H. Basedow).

EUCITHARA BICOLOR *Reeve.*

*Mangelia bicolor* Reeve, Conch. Icon., iii., June 1846, pl. v., fig. 31. *Id.* Proc. Zool. Soc., August 1846, p. 62. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 147.

*Cythara bicolor* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 161. *Id.* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 46.

*Hab.* Queensland:—20 fathoms, Darnley Island (Brazier).

EUCITHARA BROCHA *sp. nov.*

(Plate xlvi., fig. 58.)

Shell solid, biconical. Whorls six, rounded. Colour cinnamon, with several narrow zones of buff; aperture pale buff; interior ochraceous-orange. Sculpture:—Ribs slender, flexuous, fifteen to a whorl, spaced by more than their breadth, alternating from whorl to whorl, not rising above the suture, but extending thence to the base; the inter-costal spaces are crossed by fine engraved striæ. Aperture:—Mouth linear, fortified by a thick broad varix, both sides beset with stout external denticules—ten on the left, nine on the right side. Length 10 mm., breadth 4·5 mm.

*Hab.* Queensland:—Thursday Island (self).

EUCITHARA CALEDONICA *Smith.*

(Plate xlvi., figs. 59, 60.)

*Mangelia caledonica* Smith, Ann. Mag. Nat. Hist., (5), x., 1882, p. 217.

*Mangelia zonata* var. *caledonica* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 170.

This species, though united to *E. cithara* Gould by Melvill and Standen, and to *E. zonata* Reeve by Bouge and Dautzenberg, seems to be well differentiated by stout build, pure white colour, fine and even revolving threads, and especially by having only six ribs, including the varix, on the last whorl. It is unrecorded for Australia. To aid its identification I add a drawing of a specimen 10 mm. long collected at Oubatche, New Caledonia, by myself.

*Hab.* Queensland:—Palm Island (self).

EUCITHARA CAPILLACEA *Reeve.*

*Mangelia capillacea* Reeve, Proc. Zool. Soc., 1846, p. 60, and Conch. Icon., iii., 1846, pl. ii., fig. 10.

*Cythara capillacea* Smith, Journ. Linn. Soc. Zool., xii., 1876, p. 538. *Id.* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 159. *Id.* Cooke, Ann. Mag. Nat. Hist., (5), xvi., 1885, p. 36. *Id.* Boettger, Nachr. Malak. Gesell., xxvii., 1895, pp. 18, 43. *Id.* Hervier, Journ. de Conch., xlv., 1895, p. 182. *Id.* Sturany, "Pola" Exped., Bd. xxiii., 1903, p. 250.

A specimen which I collected in Torres Straits attains a length of 14 mm.

*Hab.* Queensland:—20 fathoms, Darnley Island (Brazier); 5 to 8 fathoms, Murray Island; 5 to 10 fathoms, Hope Island (self).

EUCITHARA CAPILLATA *Hervier.*

*Cithara capillata* Hervier, Journ. de Conch., xlv., 1895, pp. 54, 181, pl. viii., fig. 2.

*Mangilia capillata* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 158.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island; 4 to 14 fathoms, Albany Passage; 5 to 10 fathoms, Hope Island (self).

EUCITHARA CELEBENSIS *Hinds.*

*Mangelia celebensis* Hinds, Proc. Zool. Soc., 1843, p. 46, and Zool. Sulphur, 1844, p. 26, pl. ix., fig. 5. *Id.* Reeve, Conch. Icon., iii., 1846, pl. vii., fig. 49.

*Mangilia psalterium* Melvill and Standen, Journ. of Conch., viii., 1896, p. 285, pl. ix., fig. 23. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 168.

*Cithara eupœcila* Hervier, Journ. de Conch., xlv., 1897, pp. 52, 175, pl. vii., fig. 7.

*Cythara optabilis* Sowerby, Proc. Malac. Soc., vii., 1907, p. 300, pl. xxv., fig. 4.

*Cythara pessulata* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 159 (not *Mangelia pessulata* Reeve).

Mr. T. Iredale writes to me that the type of *M. celebensis* in the British Museum exactly corresponds to co-types of *M. psalterium.* This species of Hinds seems to have been ignored since its discovery.

*Hab.* Queensland:—Bet Island (Brazier); Lizard Island (self); Two Isles, off Cape Flattery (self).

EUCITHARA CONOHELICOIDES *Reeve.*

*Mangelia conohelicoides* Reeve, Conch. Icon., iii., 1846, pl. iv., fig. 25. *Id.* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 41. *Id.* Melvill and Standen, Journ. of Conch., viii., 1897, p. 398. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 158.

*Pleurotoma (Cithara) onager* Souverbie, Journ. de Conch., xxiii., 1875, p. 286, pl. xiii., fig. 4.

*Hab.* Queensland:—Murray Island and Rocky Isle, off Cape Flattery (self).

EUCITHARA CORONATA *Hinds.*

*Mangelia coronata* Hinds, Proc. Zool. Soc., 1843, p. 45. *Id.* Zool. "Sulphur," 1844, p. 26, pl. ix., fig. 2. *Id.* Reeve, Conch. Icon., iii., 1846, pl. vii., fig. 51.

*Mangelia zonata* Reeve, Conch. Icon., iii., 1846, pl. iii., fig. 15. *Id.* Smith, Journ. Linn. Soc. Zool., xii., 1876, p. 538. *Id.* Boettger, Nachr. Mal. Gesell., xxvii., 1895, p. 42. *Id.* Hervier, Journ. de Conch., xlv., 1897, p. 180. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913, p. 167.

*Cythara balteata* Brazier (not Reeve), Proc. Linn. Soc. N.S.W., i., 1876, p. 160.

*Mangilia (Cythara) chionea* Melvill and Standen, Journ. Linn. Soc. Zool., xxvi., 1899, p. 156, pl. x., fig. 4.

By the kind assistance of Mr. H. Fulton I have been able to recognise this widely distributed, but generally neglected, species. Both in size and colour it varies a good deal. The arched summits of the ribs rising above the line of the suture is a characteristic feature.

*Hab.* Queensland :— Murray Island (type of *chionea*, Haddon); Thursday Island (Henn); Darnley, Barnard, and Eclipse Islands (Brazier); Lizard, Dunk, Rocky Isle, and Two Isles, off Cape Flattery, Palm Island (self).

EUCITHARA CYLINDRICA *Reeve.*

*Mangelia cylindrica* Reeve, Conch. Icon., iii., 1846, pl. ii., fig. 9.

*Cythara cylindrica* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 159. *Id.* Boettger, Nachr. Malak. Gesell., xxvii., 1895, pp. 18, 43. *Id.* Hidalgo, Revista Acad. Madrid, i., 1904, p. 338.

*Cythara goodalli* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 160 (not of Reeve).

The shells collected by the "Chevert" expedition and determined by Mr. Brazier as *cylindrica* are another species, but *cylindrica* is represented in that collection by specimens labelled *Mangelia goodalli*, and by unnamed specimens from Darnley Island, Cape Grenville, and Katow. Australian shells differ from the figure of Reeve by fewer and coarser radials, absence of subsutural colour markings, and rather broader build. In these respects they approach, but do not coincide with, a series from Singapore determined as *cylindrica*, and kindly sent to me by Mr. J. R. Le B. Tomlin.

*Hab.* Queensland :—Cape Grenville; 20 fathoms, Darnley Island (Brazier); 11 fathoms, Cape Sidmouth (Henn); Forsyth Island, Gulf of Carpentaria; 4 to 14 fathoms, Albany Passage; 15 fathoms, Palm Islands (self).

EUCITHARA EUMERISTA *Melvill* and *Standen*.

*Mangelia eumerista* Melvill and Standen, Journ. of Conch., viii., 1896, p. 280, pl. ix., fig. 15. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 160.

*Mangelia signum* Melvill and Standen, *op. cit.*, p. 286, pl. ix., fig, 24.

Four specimens of the variety *signum* represent this species, which is hitherto unrecorded from Australia.

*Hab.* Queensland:—Beach, Lizard Island (self).

EUCITHARA GIBBOSA *Reeve*.

*Mangelia gibbosa* Reeve, Conch. Icon., iii., May 1846, pl. iii., fig. 21, and Proc. Zool. Soc., July 1846, p. 61. *Id.* Tryon, Man. Conch., vi., 1884, p. 266, pl. xxiv., fig. 25. *Id.* Melvill and Standen, Journ. of Conch., viii., 1897, p. 399. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 161. *Id.* Hidalgo, Revista Acad. Madrid, i., 1904, p. 338.

*Cithara gibbosa* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 45.

*Mangelia novæhollandiæ* Reeve, Conch. Icon., iii., May 1846, pl. iv., fig. 27. *Id.* Proc. Zool. Soc., 1846, p. 62.

*Cithara novæhollandiæ* Shirley, Proc. Roy. Soc. Queensland, xxiv., 1913, p. 55.

*Hab.* Western Australia:—Swan River, type of *novæhollandiæ*, (Reeve). Queensland:—Cape York (Shirley).

EUCITHARA GRACILIS *Reeve*.

*Mangelia gracilis* Reeve, Conch. Icon., iii., 1846, pl. ii., fig. 11, and Proc. Zool. Soc., 1846, p. 60. *Id.* Cooke, Ann. Mag. Nat. Hist. (5), xvi., 1885, p. 36. *Id.* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 43. *Id.* Hervier, Journ. de Conch., xlv., 1897, p. 179. *Id.* Melvill and Standen, Journ. of Conch., viii., 1897, p. 399. *Id.* Melvill and Standen, Journ. Linn. Soc., Zool., xxvii., 1899, p. 156. *Id.* Conturier, Journ. de Conch., lv., 1907, p. 131. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 161.

*Hab.* Queensland:—Warrior Island (Haddon).

EUCITHARA GUENTHERI *Sowerby*.

(Plate xlvi., fig. 61.)

*Mangelia pondorosa* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 159 (not Reeve).

*Cythara guentheri* Sowerby, Proc. Zool. Soc., 1893, pl. xxxviii., figs. 27, 28.

My figure is derived from a specimen 20 mm. long and 8 mm. broad, dredged by Brazier off Cape Grenville.

The species is like a gigantic *E. abyssicola*. It is more gibbous, with fewer radials, and larger than *E. lyrica*.

*Hab.* Western Australia.—38 fathoms, Holothuria Banks (type, J. J. Walker). Queensland:—10 fathoms, Darnley Island; Cape Grenville (Brazier); 4 to 14 fathoms, Albany Passage; 5 to 10 fathoms, Hope Island; 15 fathoms, Palm Island (self).

### Eucithara infulata *Hedley*.

*Mangelia infulata* Hedley, Proc. Linn. Soc. N.S.W., xxxiv., 1909, p. 457, pl. xliv., fig. 92.

This species closely resembles *E. apollinea* Melvill, from the Persian Gulf, but may be distinguished by larger size, fewer ribs, and more pronounced spiral striæ. For a group of smooth shells having the contour of *Eucithara*, but without the characteristic grain sculpture, I now propose a subgenus *Leiocithara*, type *M. infulata*. The following species may also be included:—*M. pellucida* Reeve, *M. trivittata* Adams and Reeve, *M. apollinea* Melvill.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island (type); 15 fathoms, Palm Island; 5 to 8 fathoms, Murray Island (self).

### Eucithara lyra *Reeve*.

(Plate xlvi., fig. 62.)

*Mangelia lyra* Reeve, Conch. Icon., iii., 1846, pl. i., fig. 3.

*Cythara citharella* Smith, Journ. Linn. Soc. Zool., xii., 1876, p. 538.

*Cithara lyra* Schepman, Siboga Exped. Monogr., xlixe., 1913, p. 436.

As this species is involved in some obscurity I present the figure of a shell thus identified, 15 mm. in length, which I collected dead on the beach at the mouth of the Annam River, Queensland. It is named by comparison with a Philippine shell sent to me by Mr. H. Fulton. The figure of Reeve represents a shell which, though slightly larger, is still immature and toothless. *E. lyra* seems not to have been previously recorded from Australia.

*Hab.* Queensland.—Annam River bar (self); Barney Point; Gladstone (Kesteven).

### Eucithara lyrica *Reeve*.

*Mangelia lyrica* Reeve, Conch. Icon., iii., 1846, pl. iii., fig. 20, and Proc. Zool. Soc., 1846, p. 61. *Id.* Hidalgo, Revista Acad. Madrid, i., 1904, p. 338.

*Cithara lyrica* Schepman, Siboga Exped. Monogr., xlixe., 1913, p. 435.
*Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 181, pl. x., fig. 3.

*Cythara cylindrica* var. *lyrica* Smith, Zool. Coll. "Alert," 1884, p. 41, pl. iv., fig. H.

*Hab.* Queensland:—7 fathoms, Port Curtis (Coppinger).

EUCITHARA MONOCHORIA *sp. nov.*

(Plate xlvi., fig. 63.)

Shell small, stout, solid, biconical. Colour russet-brown, with a definite buff band on the shoulder covering three spirals, and a less definite buff band on the base; penultimate, antepenultimate whorls, and varix also buff. Whorls six and a half, of which two and a half compose the sharply differentiated protoconch. Sculpture:—The earlier whorls of the protoconch are smooth, and the last has about twenty delicate radial riblets; the ribs on the adult shell are broad, prominent, perpendicular, and discontinuous, at first eleven, at last nine; both ribs and interstices are traversed by flat-topped elevated spirals, spaced more than their breadth apart, on the last whorl twenty-five, on the penultimate eight; the spirals are grained by the passage of fine radial striæ. Aperture:—A substantial varix stretches a free limb over the mouth; beneath it are six small tubercles; on the inner lip are ten entering plaits. Length 5 mm., breadth 2 mm.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island (type, self).

EUCITHARA MORARIA *sp. nov.*

(Plate xlvi., fig. 64.)

Shell small and subcylindrical. Colour blackish brown, the apex and bands on the lip buff. Whorls seven, the upper short, well rounded, the last flatter, half the length of the shell. Sculpture:—Riblets are set at the rate of about eighteen to a whorl, more than the breadth of each apart, incurved at the suture, those above more prominent, on the last whorl decreasing in height, and gradually vanishing on the base; both riblets and inter-costal spaces are closely encircled by alternately larger and smaller threads, which are in turn grained by finer radial lines. Aperture narrow; well developed external varix, slightly incised by posterior notch; within the outer lip are a few small denticules, and on the inner lip fourteen short entering ridges. Length 9 mm., breadth 3·5 mm.

This species is a relation of *E. cylindrica*, from which it is distinguished by dentition, colour, coarser sculpture, and blunter extremities.

*Hab.* Queensland:—Annam River bar (type, self); 13 fathoms, Princess Charlotte Bay (Brazier).

EUCITHARA MIRIAMICA[61] *sp. nov.*

(Plate xlvi., fig. 65.)

Shell small, solid, cylindro-conic. Colour ferruginous, with an ochraceous orange band on the shoulder; another specimen is uniform orange, except the varix, which is ferruginous. Whorls seven, including a protoconch of two and a half whorls. Sculpture:—Protoconch at first smooth, afterwards ornamented by numerous fine arcuate riblets, which end abruptly; the adult whorls carry from eight to nine prominent spaced ribs; these are crossed by distant spiral threads, of which there are twenty on the last whorl, and six on the penultimate; the whole is over-run by fine radial lines of minute grains. Aperture protected by a strong varix, in which a semi-circular sinus is excavated; on each side of the sinus is a tubercle, and but a single plait on the upper part of the columella. Length 4·5 mm., breadth 2 mm.

In size and sculpture this has much resemblance to *E. monochoria*, but may be distinguished by more slender form and absence of columella armature.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (type, self); 20 fathoms, off Endeavour Reef (A. R. McCulloch).

EUCITHARA PAGODA *May.*

*Daphnella pagoda* May, Proc. Roy. Soc. Tasm., 1910 (1911), p. 393, pl. xv., fig. 20.

*Hab.* Tasmania:—80 fathoms, 10 miles east of Schouten Island (type, May).

EUCITHARA PELLUCIDA *Reeve.*

*Mangelia pellucida* Reeve, Proc. Zool. Soc., 1846, p. 64. *Id.* Reeve, Conch. Icon., iii., 1846, pl. viii., fig. 61.

*Cythara pellucida* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 160.

*Hab.* Queensland:—25 to 30 fathoms, Darnley Island (Brazier); Lizard Island; 5 to 8 fathoms, Murray Island (self).

EUCITHARA PHYLLIDIS *sp. nov.*

(Plate xlvi., figs. 66, 67.)

Shell small, solid, fusiform, angled at the shoulder, contracted at the sutures and at the base. Colour crystalline white, with or without a dorsal blot and zone of ochraceous-orange only on the last whorl. Whorls seven, including a smooth helicoid tip. Sculpture:—The radials are wide spaced, prominent, flexuous, perpendicular, and continuous ribs, which diminish at the shoulder and gradually vanish on the base; on the ante-penultimate there are ten, and on the last whorl eight, including the

[61] The name of the Murray Island people is "Miriam."

varix; the spirals are extremely fine and close threads, evenly distributed over the whole surface, and microscopically beaded. Aperture:—The mouth is vertical, and rather wide; from the varix a thin lip projects, curving forwards at the periphery, and followed beneath by an insinuation; underneath the varix the throat is finely striated; sinus broad and shallow; canal short; on the inner lip a small tubercle rises opposite the sinus, and the columella is smooth. Length 7·5 mm., breadth 3 mm.

This species also occurs in the Loyalty Islands, for specimens of it from Lifu were given to me under the name of *Cithara striatella* Smith. A different, though related, species has lately been figured[62] under this name. Possibly mine is the species which Bouge and Dautzenberg[63] doubtfully record from Lifu as *Mangelia inepta* Smith.

This dainty little shell is appropriately named after the lady whose drawings embellish this memoir.

*Hab.* Queensland:—Beach, Lizard Island (type, self).

### Eucithara pulchella *Reeve.*

*Mangelia pulchella* Reeve, Conch. Icon., iii., 1846, pl. iii., fig. 18, and Proc. Zool. Soc. 1846, p. 61. *Id.* Melvill and Standen, Journ. Linn. Soc. Zool., xxvi., 1899, p. 156.

*Cithara pulchella* Hidalgo, Revista Acad. Madrid, 1904, p. 339.

*Hab.* Queensland:—Torres Straits (Haddon).

### Eucithara souverbiei *Tryon.*

*Pleurotoma (Cithara) coniformis* Souverbie, Journ. de Conch., xxiii., 1875, p. 288, pl. xiii., fig. 5 (not *Cythara coniformis* Gray).

*Mangelia souverbiei* Tryon, Man. Conch., vi., 1884, p. 264, pl. xxii., fig. 65. *Id.* Melvill and Standen, Journ. of Conch., viii., 1897, p. 399. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 164.

*Cithara souverbiei* Hervier, Journ. de Conch., xlv., 1897 (1898), p. 51.

This species has not been hitherto recorded from Australia. I collected on the beach in 1916 a single specimen of the white variety.

*Hab.* Queensland:—Rocky Isle, off Cape Flattery (self).

### Eucithara striatissima *Sowerby.*

(Plate xlvi., fig. 68.)

*Cythara striatissima* Sowerby, Proc. Malac. Soc., vii., 1907, p. 294, pl. xxv., fig. 3.

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[62] Melvill—Proc. Malac. Soc. xii., 1917, pl. x., fig. 4.

[63] Bouge and Dautzenberg—Journ. de Conch., lxi., 1913 (1914), p. 162.

A specimen from Torres Straits, thus doubtfully determined from literature and here figured, is immature and small, being 8·5 mm. long and 4 mm. broad, biconical, densely encircled by spiral threads, of which there are about forty on the last whorl. There are about nineteen radials projecting as tubercles along the angle of the shoulder, but faint above and below. On the earlier whorls the shoulder nodules are proportionately more prominent. The whole surface has a secondary sculpture of close microscopic radial threads. Whorls seven, including a small smooth protoconch of two helicoid whorls. Aperture incomplete, but commencing to form a varix and mounting on the preceding whorl. *Cithara matakuana* Smith[64] has a general resemblance, but has fewer and coarser radials.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self); 20 fathoms, off Endeavour Reef (A. R. McCulloch).

EUCITHARA STROMBOIDES *Reeve.*

*Mangelia stromboides* Reeve, Conch. Icon., iii., June 1846, pl. v., fig. 33, and Proc. Zool. Soc., July 1846, p. 63.

*Eucithara stromboides* Fischer, Man. de Conch., 1883, p. 593.

*Cithara stromboides* Boettger, Nachr. Malak. Gesell., xxvii., 1895, pp. 18, 44. *Id.* Hidalgo, Revista Acad. Madrid, i., 1904, p. 339. *Id.* Schepman, Siboga Exped. Monogr. xlixe., 1913, p. 435.

*Cithara delacouriana* Crosse, Journ. de Conch., 1869, p. 178, and 1872, p. 66, pl. ii., fig. 4. *Id.* G. and H. Nevill, Journ. Asiat. Soc. Bengal, xliv., 1875, p. 90. *Id.* Conturier, Journ. de Conch., lv., 1907, p. 131. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 159.

*Hab.* Queensland:—Eclipse Island (Brazier); Palm and Green Islands (self).

EUCITHARA VEXILLUM *Reeve.*

*Mangelia vexillum* Reeve, Conch. Icon., iii., 1846, pl. i., fig. 2, and Proc. Zool. Soc., 1846, p. 59. *Id.* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 44. *Id.* Melvill and Standen, Journ. of Conch., viii., 1895, p. 98. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 167.

*Cithara vexillum* Hidalgo, Revista Acad. Madrid, i., 1904, p. 339.

*Hab.* Queensland:—Mapoon, Gulf of Carpentaria (self).

ETREMA *Hedley.*

*Etrema* Hedley, Journ. Roy. Soc. N.S.W., li., 1918, suppl. p. M. 79.

Shell elongate-conic, solid. Aperture with a series of entering plications on both lips. Notch subsutural, deeply excavate, open and

[64] Smith—Ann. Mag. Nat. Hist. (5), xiv., 1884, p. 328.

effuse exteriorly. Outer lip strongly inflected. Aperture about a quarter of the total height. Sculpture:—Prominent rounded ribs, suddenly swelling on the periphery, but not extending to either base or suture. The whole shell, except the nucleus, is usually over-run by fine, dense, beaded threads. Colour white, ranging through buff and brown to chocolate, variously disposed, but frequently with a dark patch on the lip at the right insertion, and another near the canal. Fasciole not differentiated by sculpture from the rest of the whorl. Type *Mangilia (Glyphostoma) aliciæ* Melvill and Standen, 1895.

This group has been included by most recent writers in *Glyphostoma*, a genus whose history therefore acquires an interest in this connection. Briefly it is sketched thus:

For a West Indian Turrid, *G. dentifera*, having an aperture toothed almost as strongly as that of *Cyprœa*, Dr. W. M. Gabb[65] proposed in 1872 a new genus, *Glyphostoma*. Soon afterwards Semper[66] re-grouped under *Glyphostoma* the following tropical Indo-Pacific species:—*M. spurca*, *cinerea*, *candida*, and *argillacea* Hinds; *M. roseotincta* Montrouzier; and *M. obesa* Garrett. An Australian species in the form of *G. paucimaculata* was added by Angas.[67] In the hands of Bouge and Dautzenberg this genus aggregated a considerable number of new New Caledonian species. A revulsion then occurred, and Schepman and Melvill have lately transferred several of these Indo-Pacific *Glyphostoma* to *Lienardia*.

Hervier[68] had already noticed that several species grouping round *G. crassilabrum* Reeve were distinguishable from the body of the genus as he knew it.

Dr. W. H. Dall with his usual kindness gave me, in addition to a characteristic specimen, the benefit of his experience. With reference to *Glyphostoma* he writes:—"It appears to me a good genus. The shell is essentially like the shells Carpenter used to call *Clathurella* (not the genus *Defrancia)*, but is larger, and is especially characterised by the denticulate calluses on the pillar lip and outer varix. It has no operculum. The protoconch is sharply carinate, and the shell is invariably more or less axially ribbed and with some spiral sculpture."

Comparing an example of *G. gabbi* Dall with the so-called Australian *Glyphostoma*, I find that in each the protoconch is on the same general plan—a small smooth helicoid tip of a whorl and a half, followed by one or two whorls with a sharp peripheral keel. In the fasciole there is a marked distinction. *Glyphostoma* has the fasciole on the larger whorls traced by discrepant sculpture, but in *Etrema* the fasciole is obliterated in a sculpture uniform with the rest of the shell. In *Etrema* the tubercles of the columella never ascend to the parietal wall. In other features of the aperture there is a general resemblance.

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[65] Gabb—Proc. Acad. Nat. Sci. Philad., 1872, p. 270, pl. xi., fig. 4.

[66] Semper—Verh. Ver. Hamburg, ii., 1876, pp. 199-203.

[67] Angas—Proc. Zool. Soc., 1880, p. 416.

[68] Hervier—Journ. de Conch., xliv., 1896, p. 85.

I conclude that the Australian species may be conveniently separated from the West Indian *Glyphostoma*, with which they have been associated. *Etrema* is indeed nearer to *Lienardia*, from which its elongate form and different colour scheme distinguish it.

ETREMA ACRICULA *sp. nov.*

(Plate xlvi., fig. 69.)

Shell small, solid, ovate-lanceolate, turreted, the prominence of the varix inclining the shell to a hatchet form. Colour buff, apex pale orange; darker orange on the base and aperture. Whorls seven, including the protoconch of three whorls. Sculpture:—Above the sharp shoulder angle run two or three small spiral threads; below it on the last whorl are eleven spiral cords, at first prominent and spaced, but gradually becoming smaller and more crowded on the base and snout; on the last whorl are nine radials descending from the shoulder to the base as prominent perpendicular riblets. Aperture:—The varix is very prominent, folding a free limb towards the aperture, externally it is traversed by six spiral threads, internally there are three tubercles; the sinus is excavated at an oblique angle to the aperture, and is broad and effuse; canal short and open; columella with two longer and one short plait, the latter lowest. Length 3·5 mm., breadth 1 mm.

This species has somewhat the appearance of a minature and telescoped *Pseudoraphitoma ditylota.*

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

ETREMA ALICIÆ *Melvill* and *Standen.*

(Plate xlvii., fig. 70.)

*Mangilia (Glyphostoma) aliciæ* Melvill and Standen, Journ. of Conch., viii., 1895, p. 95, pl. ii., fig. 15.

*Glyphostoma aliciæ* Hedley, Mem. Austr. Mus., iii., 1899, p. 471. *Id.* Bouge and Dautzenberg, Journ. de Conch., xli., 1913 (1914), p. 170.

*Lienardia aliciæ* Schepman, Siboga Exped. Monogr. xlixe., 1913, p. 436.

As stated under the heading of *E. labiosa*, my previous reference to *E. aliciæ*, from Queensland, and my figure[69] was based on another species. An authentic Lifuan specimen of *E. aliciæ* is now figured here to dispel further misapprehension.

*Hab.* Queensland:—Lizard Island (self).

ETREMA ALLITERATA *Hedley.*

*Glyphostoma alliteratum* Hedley, Proc. Linn. Soc. N.S.W., xxxix., 1915, p. 728, pl. lxxxii., figs. 56, 57.

*Hab.* N.S.Wales:—Port Jackson (type); Wreck Bay; Gerringong; Dudley (self). Queensland:—Caloundra (Kesteven).

[69] Hedley—Proc. Linn. Soc. N.S.W., xxxiv., 1909, p. 471, pl. xliii., fig. 88.

ETREMA ALPHONSIANA *Hervier.*

(Plate xlvii., fig. 71.)

*Glyphostoma alphonsianum* Hervier, Journ. de Conch., xliii., 1895 (1896), p. 237, and xliv., 1896 (1897), p. 86, pl. iii., fig. 24. *Id.* Bouge and Dautzenberg, *op. cit.*, lxi., 1913 (1914), p. 171.

As the original figure is rather indefinite, an illustration is here supplied of a dead specimen that I gathered in July, 1916, on the beach of Lizard Island. It has not yet been noticed from Australia.

*Hab.* Queensland:—Lizard Island; Murray Island (self).

ETREMA ARGILLACEA *Hinds.*

*Clavatula argillacea* Hinds, Proc. Zool. Soc., 1843, p. 39, and Zool. Sulphur, 1844, p. 18, pl. vi., fig. 1.

*Pleurotoma argillacea* Reeve, Conch Icon., i., 1845, pl. xxv., fig. 217.

*Glyphostoma argillacea* Semper, Verh. Ver. Hamburg, ii., 1876, p. 202.

*Clathurella argillacea* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 156.

*Lienardia argillacea* Jousseaume, Bull. Soc. Zool. France, ix., 1884, p. 185. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 185.

*Hab.* Queensland:—30 fathoms, Darnley Island (Brazier).

ETREMA BICOLOR *Angas.*

*Clathurella bicolor* Angas, Proc. Zool. Soc., 1871, p. 18, pl. i., fig. 20, and 1880, p. 416. *Id.* Tenison-Woods, Proc. Roy. Soc. Tasm., 1878 (1879), p. 38. *Id.* Sowerby, Proc. Malac. Soc., ii., 1896, p. 29. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 179. *Id.* May, Proc. Roy. Soc. Tasm., 1908, p. 53. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 308. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 183.

*Glyphostoma bicolor* Hedley, Proc. Linn. Soc. N.S.W., xxxix., 1914 (1915), p. 729, pl. lxxxii., figs. 60, 61.

In general appearance *E. bicolor* is very close to *E. pyramidula*, but seems to be distinguishable by a taller and more slender form, less prominent radials, finer sculpture, and rounder whorls.

*Hab.* N.S.Wales:—Port Jackson (type, Angas); Wreck Bay; Jervis Bay (self). Victoria:—Western Port (Gatliff). Tasmania:—Circular Head (Tenison-Woods); Fredrick Henry Bay (May). South Australia:—5 to 22 fathoms, St. Vincent Gulf; 40 to 110 fathoms, Beachport; 45 fathoms, Neptune Island; Murat Bay; St. Francis Island (Verco). Western Australia:—Cottesloe (Henn).

ETREMA CAPILLATA *sp. nov.*

(Plate xlvii., fig. 72.)

Shell rather thin and light, biconical, turreted, and sharply angled at the shoulder. Colour buff, with rufous stains on the columella, the lip insertion, and along the suture. Whorls eight, including the protoconch, which has two small smooth whorls, and a third larger depressed and crossed by sharp arched riblets. Sculpture:—The adult whorls carry discontinuous prominent spaced ribs, which arise at the suture and continue to the base, those on the spire being perpendicular and set closer together, at the rate of ten to a whorl, those on the last whorl being wider spaced at eight to a whorl, and flexed forward below the shoulder; these cords gradually become smaller and closer; the whole shell is over-run by very fine and close hair-lines which, decussated by a corresponding spiral sculpture, produces a fine grained surface. Aperture wide, protected by a prominent varix; sinus wide and shallow; canal short and open. Length 9 mm., breadth 3 mm.

*Hab.* Queensland:—8 fathoms, Weary Bay (self).

ETREMA CATAPASTA *sp. nov.*

(Plate xlvii., fig. 73.)

Shell small, ovate-lanceolate, with rounded whorls. Colour orange, with a white median zone. Whorls eight, including a protoconch of three whorls, and of the usual pattern. Sculpture:—On the last whorl are twelve spirals, the anterior ones being fine threads on the snout, and the median ones represented by crescentic beads on the riblets; there are four spirals on the penultimate; radials discontinuous and perpendicular, amounting to twelve on the last whorl. A prominent varix extends a free limb towards the aperture; within it are five small tubercles; the pillar lip has two transverse plaits; canal short; sinus broad and effuse. Length 5·5 mm., breadth 2·2 mm.

*E. catapasta* may be briefly described as a miniature of *E. opsimathes* Melvill and Standen,[70] with which it closely corresponds in sculpture and colour, but from which it differs by being a third of the length, having a whorl less, broader form, and more delicate sculpture.

*Hab.* Queensland:—12 fathoms, Torres Straits (type, Brazier); Lady Elliot Island (Miss Lovell); 10 fathoms, Van Diemens Inlet, Gulf of Carpentaria (self). Papua:—Katow ("Chevert").

ETREMA CULMEA *n. sp.*

(Plate xlvii., figs. 74, 75.)

Shell rather large for the genus, solid, elevated, and tapering. Colour buff, with salmon-orange between the ribs and on the base. Whorls rounded, ten, including a two-whorled protoconch. Sculpture:—Discontinuous radial ribs, which take the form of oblique, broad, widely spaced

[70] Melvill and Standen—Ann. Mag. Nat. Hist., (7), xii., 1903, p. 314, pl. xxii., fig. 19.

undulations, traverse the upper whorls and vanish on the base; on the last whorl these ribs, exclusive of the varix, amount to eight; these are over-ridden by alternately larger and smaller dense spiral threads; on the last whorl, where the intermediates are sometimes double, the major threads amount to twenty-five; all these threads carry very minute sharp and close grains. Aperture:—Varix very heavy and prominent; sinus broad, and expanding outwardly; canal short and open; inner lip with ten entering ridges, which continue in the throat; columella lip with nine elongate tubercles. Length 15 mm., breadth 5·5 mm.

This is like *Pleurotoma crassilabrum* Reeve, but is larger, and the ribs are more widely spaced.

*Hab.* Queensland:—20 fathoms, Darnley Island (type, Brazier).

ETREMA CURTISIANA *sp. nov.*

(Plate xlvii., fig. 76.)

Shell narrowly lanceolate, angled on the spire whorls. Colour uniform ochraceous-buff. Whorls nine, including a protoconch of two smooth and one keeled whorl. Sculpture:—The original keel gradually breaks up into radials, which on the fifth whorl appear as prominent, broad, tubercular ribs, set at about nine to the whorl, perpendicular and discontinuous; these decrease in relative size, but increase in number till they amount to twelve on the last whorl, sometimes splitting into riblets on the base; fine spiral threads, amounting to eleven on the penultimate and to about thirty-three on the final whorl, are spaced on the periphery and crowded towards the base and fasciole area. Aperture:—The varix is prominent and expanded, toothed at the oral margin by the spiral sculpture; columella margin armed by four transverse plications; both sinus and canal are short and expanded. Length 9·5 mm., breadth 4 mm.

This is related to *E. spurca* Hinds, differing from that by smoother contour, more delicate sculpture, more numerous evanescent ribs, and more numerous and finer spirals.

*Hab.* Queensland:—7 fathoms, Port Curtis (type, Brazier).

ETREMA DENSEPLICATA *Dunker.*

*Drillia denseplicata* Dunker, Mal. Blatt., xviii., 1871, p. 159.

*Pleurotoma denseplicata* Weinkauff, Conch. Cab., iv., Abth. 3, 1876, p. 107, pl. xxiii., figs. 7, 9.

*Clathurella denseplicata* Hedley, Proc. Linn. Soc. N.S.W., xxvii., 1902, p. 17. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xviii., 1906, p. 50.

*Clathurella philomena* Tenison-Woods, Proc. Roy. Soc. Tasm., 1875 (1876), p. 141. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 371. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 177. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 307.

*Drillia atkinsoni* Tenison-Woods, Proc. Roy. Soc. Tasm., 1875 (1876), p. 142 (not *Drillia atkinsoni* Smith, Ann. Mag. Nat. Hist. (4), xix., 1877, p. 495).

*Siphonalia pulchra* Tenison-Woods, Proc. Roy. Soc. Tasm., 1876 (1877), p. 139, and 1879 (1880), p. 70. *Id.* Petterd, Journ. of Conch., ii., 1879, p. 353.

Types of *denseplicata* are in the Hamburg Museum, of *crassina* and *kymatœssa* in the British Museum, of *atkinsoni*, *philomena*, and *pulchra* in the Tasmanian Museum.

*Hab.* Tasmania:—Bass Strait, type of *denseplicata* (Godeffroy Museum). East Tasmania:—Type of *philomena* (Tenison-Woods); Long Bay, type of *atkinsoni* (Atkinson); Chappell Island, type of *pulchra* (Legrand); King Island (Tate). Victoria:—Portland; Western Port (Pritchard and Gatliff). South Australia:—6 to 300 fathoms, Robe to Le Hunte Bay (Verco).

Var. Crassina *Angas.*

*Clathurella crassina* Angas, Proc. Zool. Soc., 1880, p. 416, pl. xl., fig. 6.
*Clathurella parvula* Sowerby (not Reeve), Proc. Malac. Soc., ii., 1896, p. 28.

*Hab.* South Australia:—Aldinga Bay (type, Tate); Spencer Gulf and Hardwick Bay (Bednall). Western Australia:—Cottesloe (Henn). Victoria:— Port Fairy (Whan); Shoreham (Gabriel); Port Phillip (Gatliff).

Var. Kymatœssa *Watson.*

*Pleurotoma (Drillia) kymatœssa* Watson, Chall. Rep. Zool., 1886, xv., p. 309, pl. xxvi., fig. 5.

*Clathurella kymatœssa* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 178.

*Hab.* Tasmania:—38 fathoms, East Monceur Island ("Challenger"). South Australia:—40 fathoms, Cape Borda (self).

Etrema elegans *sp. nov.*

(Plate xlvii., fig. 77.)

Shell small, ovate-lanceolate, turreted on the upper whorls. Colour buff, with chocolate stains on the pillar and canal. Whorls seven, including the protoconch, which consists of a minute rounded up-standing initial whorl, followed by two smooth whorls with a median keel. Sculpture:—The upper and lower whorls have diverse patterns of sculpture; in the first adult, that is the fourth whorl, there is a flat sloping shoulder, margined by a sharp and prominent keel; anterior to the keel the whorl is vertical, and carries two spiral threads; under the keel spring faint radial riblets that vanish before they traverse the whorl. On the last whorl the contour changes from pagodiform to ovate, with a faint shoulder angle; below the suture run four fine close spiral threads,

followed about the periphery by three prominent cords, and again on the base and snout by nine evenly spaced spiral threads; over-ridden by these spirals are about thirteen oblique riblets, which are faint on the shoulder, prominent on the periphery, where they form with the spirals a conspicuous open net-work, and vanish on the base; on the penultimate there are seven spirals. Aperture:—The varix is prominent; under the free limb of it are five small entering plaits; the pillar is unarmed; the canal short, straight, and effuse. Length 4·5 mm., breadth 1·5 mm.

Apparently this is close to *Mangilia clariscalpta* Melvill,[71] which I have not seen, but the Australian species may be differentiated by having anterior spirals.

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (type); 5 to 10 fathoms, Hope Island; 15 fathoms, Palm Island; 5 fathoms, Van Diemans Inlet, Gulf of Carpentaria (self); 10 fathoms, Cape Sidmouth (Henn); 20 fathoms, off Endeavour Reef (McCulloch).

### Etrema firma *sp. nov.*

(Plate xlvii., fig. 78.)

Shell small, very solid, and biconical. Colour ochraceous-buff, darkening on the spire and within the aperture to ferruginous. Whorls seven, including a protoconch of two and a half whorls, the last of which is sharply, delicately, keeled. Suture impressed and undulating. Sculpture:—The entire shell is encircled by comparatively coarse spiral threads, a pair of which on the periphery exceed the rest in size; on the last whorl these spirals amount to twenty-three, and on the penultimate to nine; the radials assume the form of peripheral tubercles, set at ten to a whorl; on the base each rib splits into two small riblets. Aperture:—The varix is large and prominent, having four teeth on the oral margin; sinus broad and pouting; canal short and open; columella lip crossed by four plications. Length 6 mm., breadth 3 mm.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island (type, self).

### Etrema glabriplicata *Sowerby.*

(Plate xlvii., figs. 79, 80.)

*Glyphostoma glabriplicatum* Sowerby, Ann. Mag. Nat. Hist. (8), xii., 1913, p. 233, pl. iii., fig. 1.

*? Pleurotoma crassilabrum* var. *beta* Reeve, Conch. Icon., i., 1843, pl. xiv., fig. 118a.

*Glyphostoma crassilabrum* var. *minutissime-lirata* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 175.

This species is unrecorded for Australia. An example from Murray Island 13·5 mm. long, here figured, differs slightly from typical Japanese

[71] Melvill—Proc. Malac. Soc., x., 1912, p. 251, pl. xi., fig. 44.

examples by being broader, with more numerous ribs, and being speckled with brown. In these features it agrees with Lifuan material labelled "var. *delta*" by Hervier.[72]

*Hab.* Queensland:—Murray Island; Two Isles, off Cape Flattery; outer Barrier Reef, about S. lat. 14 (self).

ETREMA LABIOSA *sp. nov.*

*Clathurella crassilabrum* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 156 (not *Pleurotoma crassilabrum* Reeve, Conch. Icon., i., pl. xiv., fig. 118).

*Glyphostoma alicea* Hedley, Proc. Linn. Soc. N.S.W., xxxiv., 1909, p. 454, pl. xliii., fig. 88 (not *G. alicea* Melvill and Standen).

Shell large, solid, lanceolate. Colour buff, with chocolate stains on either side of both sinus and canal, a fainter chocolate band on base. Whorls ten, rounded. Sculpture:—Round-backed prominent ribs, set their breadth apart, twelve on the penultimate, arise below the suture and gradually vanish on the base; the spirals are coarse threads which over-ride the ribs and amount to thirty-five on the last whorl, five on the fasciole being small and uniform; on the periphery several minute threads are intercalated between the larger ones; on the snout are about twelve coarse spaced threads. Aperture fortified by a broad and high varix, expanding into a free edge with a serrate margin; within the margin are eight entering lyræ, the lowest twice as large as the others; inner lip with a substantial callus; on the lower part of the columella are two plications; canal short, open; sinus deeply incised, sub-circular. Length 14 mm., breadth 5 mm.

This species was confused by me with its near ally *E. alicea*. On closer examination that is found to differ by being larger, proportionately broader, and by having the spiral sculpture more developed, especially on the fasciole. *E. labiosa* occurs in the mud zone, while *E. alicea* is apparently confined to the clearest water. Another ally is *E. obtusicostata* Smith, which has less prominent ribs and more even spirals. *E. crassilabrum* Reeve is a shorter broader shell than *E. labiosa*, with closer ribs and more even spirals. *E. glabriplicata* Sowerby is distinguishable from *E. labiosa* by wider spaced radials, and by the unusually fine and even texture of the spirals. *E. culmea* Hedley has a broader shell than *labiosa*, with fewer ribs and more regularly alternating large and small spirals.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island (self); 25 to 30 fathoms, Darnley Island (Brazier).

ETREMA NASSOIDES *Reeve.*

(Plate xlvii., fig. 81.)

*Pleurotoma nassoides* Reeve, Conch. Icon., i., 1845, pl. xxix., fig. 259.

*Mangelia nassoides* Hedley, Proc. Linn. Soc. N.S.W., xxxviii., 1913, p. 310.

[72] Hervier—Journ. de Conch., xliii., 1895, p. 236.

*Clathurella zonulata* Angas, Proc. Zool. Soc., 1867, p. 113, pl. xiii., fig. 17. *Id.* Brazier, Journ. of Conch., vi., 1889, p. 71. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 178.

The types of both *nassoides* and *zonulata* are in the British Museum.

*Hab.* N.S.Wales:—Port Jackson, type of *zonulata* (Angas); Middle Harbour (Brazier); Gerringong; Twofold Bay (self). Victoria:—Western Port (Pritchard and Gatliff).

ETREMA ORIRUFA *sp. nov.*

(Plate xlvii., fig. 82.)

Shell small, rather solid, lanceolate, contracted at sutures, and excavate at the base. Colour uniform pale cinnamon, protoconch white, interior of aperture rufous to orange-buff. Whorls seven, including the protoconch. Sculpture:—The ribs are prominent, round-backed, parted by hollow interstices, continuing obliquely up the spire, gradually vanishing on the base, and set nine to a whorl; ten main spiral cords encircle the body whorl, of which three ascend to the antepenultimate; these ride high over the ribs and bridge the interstices; a minute thread is intercalated between the wider spirals; these spirals are beset with sharp close grains, which give a harsh touch to the shell. Aperture oblong, rather narrow, protected by a prominent and massive varix; sinus a slight insinuation; canal short and broad; within the outer lip are five denticules, and two obscure folds cross the inner lip. Length 6 mm., breadth 2·5 mm.

*Hab.* Queensland:—5 fathoms, Van Diemens Inlet, Gulf of Carpentaria (type); 10 fathoms, Cape Sidmouth (Henn); Cairns (self).

ETREMA PAUCIMACULATA *Angas.*

*Mangelia cavernosa* Angas (not Reeve), Proc. Zool. Soc., 1865, p. 160.

*Glyphostoma paucimaculata* Angas, Proc. Zool. Soc., 1880, p. 416, pl. xl., fig. 7.

*Mangelia paucimaculata* Sowerby, Proc. Malac. Soc., ii., 1896, p. 30. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 369. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 314. *Id.* May, Checklist of Mollusca of Tasmania, 1921, p. 109 (not of Melvill and Standen or of Bouge and Dautzenberg).

Sir J. C. Verco, who described the animal, notes that it has no operculum. May remarks that it was wrongly identified from Tasmania.

*Hab.* South Australia:—Aldinga and Holdfast Bays (type, Angas); Kangaroo Island (Verco). Western Australia:—Cottesloe (Henn); Sharks Bay (Captain W. Burrows).

Under the name of *Mangilia paucimaculata* there has been cited [73] [74] from Lifu a shell of a different genus and species, smaller, and with fewer

[73] Melvill and Standen—Journ. of Conch., viii., 1897, p. 399.
[74] Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 154.

slighter ribs, yet with a misleading superficial resemblance. As the story of the Lifuan species has been entangled with that of the South Australian, it seems well to deal with the error as detected, though the limits of this paper are thereby exceeded, and to offer the following description of the nameless shell.

LIENARDIA FALSARIA *n. sp.*

(Plate xlviii., fig. 88.)

Shell ovate-fusiform, very solid. Whorls six. Colour white, with ochraceous-orange as a peripheral zone, re-appearing on the spire, about the suture, again on the inner lip, and as a spot on the extremity of the snout. Sculpture:—The radial ribs are about nine to a whorl; not continuous from whorl to whorl; angled, and projecting at the shoulder, evanescent on the fasciole, but reappearing as a subsutural bead, on the last whorl diminishing towards the base, which they scarcely reach; both ribs and interspaces traversed by rather coarse, even, spiral threads. Aperture oblong, protected by a rather prominent arcuate varix, which is produced into a broad free edge, and incised by a rather deep sinus; inner lip with a stout tubercle at the sinus, and six horizontal ridges diminishing from above to below; on the opposite side are nine small pustules beneath the varix.

*Hab.* Loyalty Islands:—Lifu. New Caledonia.

ETREMA POLYDESMA *sp. nov.*

(Plate xlvii., fig. 83.)

Shell small, spire slender and much elevated, shoulder of the whorls angled, base a little concave. Colour buff, chestnut on the base and both sides of the mouth. Whorls seven, including a three-whorled protoconch of the usual type. Sculpture:—On the last whorl are twenty spirals, of which twelve are on the base and snout, and three on the shoulder; where the central series enlarge and cross over the radials they look like links in a chain; between these major spirals run microscopic hair-lines; on the last whorl are twelve perpendicular consecutive radials, which undulate the suture, attain greatest development on the periphery, and gradually disappear on the base. Aperture:—Varix large, with a peaked hump; beneath it are six small teeth; columella unarmed; sinus broad and expanding. Length 4·5 mm., breadth 1·5 mm.

This form was misidentified by myself[75] from Mast Head Island as *Glyphostoma polynesiense*.

*Hab.* Queensland:—15 fathoms, Palm Islands (type); 5 to 10 fathoms, Hope Island; 5 to 8 fathoms, Murray Island; 4 to 14 fathoms, Albany Passage (self); 10 fathoms, Cape Sidmouth (Henn).

[75] Hedley—Proc. Linn. Soc. N.S.W., xxxii., 1907, p. 484.

ETREMA RAVELLA *sp. nov.*

(Plate xlviii., fig. 84.)

Shell elongate biconic, a flat sloping shoulder and a perpendicular periphery giving it a pagodiform aspect. Colour buff, sometimes with pale yellow bands on the last whorl, on the outer lip lemon yellow, sometimes with chocolate on the pillar. Whorls seven, including the protoconch, which consists of a small rounded upstanding whorl, followed by two sharply keeled whorls. Sculpture:—On the last whorl are twenty-two spirals, of which three on the periphery are most prominent; the radials are not consecutive, they increase from nine on the early whorls to fifteen on the last; they are slight near the suture, prominent on the periphery, and absent on the base; they are over-ridden by the spirals, which form deep meshes on the periphery, a double row on the last whorl and a single one above. Aperture:—The prominent varix spreads a broad tooth-edged lip over the mouth; it is excavated above in a spout-like sinus; at the lip insertion is a massive coloured tubercle; within the lip are four or five entering plications; across the columella are two transverse plaits; canal short. Length 5 mm., breadth 2·2 mm.

This species is related to *E. elegans*, but that is smaller, more slender, with an unarmed columella, and lattice sculpture on the periphery.

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (type); 8 fathoms, Weary Bay; 5 to 10 fathoms, Hope Island; 5 fathoms, Van Diemens Inlet; 5 fathoms, off Horsey River, Gulf of Carpentaria (self); 10 fathoms, Cape Sidmouth (Henn).

ETREMA SPARULA *sp. nov.*

(Plate xlviii., fig. 85.)

Shell large, broad, and comparatively thin, conic-fusiform, contracted at the base, turreted, last whorl about as long as the spire. Whorls eight, including the protoconch, which is mucronate of two whorls, the first flat-topped, the next keeled. Suture canaliculate. Colour buff, finely speckled with chestnut, the spots larger and darker near the suture, with a pale zone below the periphery. Sculpture:—The ribs are low, round-backed, sharply angled at the shoulder, vanishing on the base and round the fasciole area, spaced at twelve to a whorl; the whole shell is wrapped in sharp narrow threads, which swell on crossing a rib and shrink in the interval; they are parted by furrows deeper than wide, and support microscopic close-set transverse beads; on the penultimate there are about twenty-three and on the last whorl about sixty of these cords. Aperture:—The variceal ridge is tall and narrow, from which extends squarely a free limb dentate at the edge and slightly ribbed within; sinus rather deep and C-shaped; a callus tubercle at the right insertion is tricuspid; on the inner lip the callous sheet thins off to a fine edge, and has a few faint plications anteriorly; canal short, broad, and recurved. Length 17 mm., breadth 7·5 mm.

In this large species the unusual depth seems to have produced a thinner shell, in which the armature of the aperture is comparatively feeble.

*Hab.* South Australia:—100 fathoms, 40 miles south of Cape Wiles (type, self).

ETREMA SPURCA *Hinds.*

(Plate xlviii., fig. 86.)

*Clavatula spurca* Hinds, Proc. Zool. Soc., 1843, p. 39. *Id.* Hinds, Zool. "Sulphur," 1844, p. 17, pl. v., fig. 14. *Id.* Semper, Vehr. Ver. Hamburg, ii., 1876, p. 202.

*Pleurotoma spurca* Reeve, Conch. Icon., i., 1846, pl. xxxiv., fig. 312.

*Glyphostoma spurca* Sowerby, Proc. Malac. Soc., ii., 1896, p. 32.

*Lienardia spurca* Schepman, Siboga Exped. Monogr., xlixe., 1913, p. 434. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 184.

*Mangilia spurca* Odhner, Kung. Sv. Vet. Akademiens Handl., lii., 16, 1917, p. 58.

*Pleurotoma rava* Reeve (not Hinds), Conch. Icon., i., 1845, pl. xxviii., fig. 250.

A specimen referred to this species, 12·5 mm. long and 5 mm. broad, which I gathered in 1906, dead, on the beach at Cairns is here illustrated.

*Hab.* Queensland:—Cairns; Forsyth Island, Gulf of Carpentaria (self). Arafura Sea. Northern Territory:—32 to 36 fathoms, Port Darwin (Coppinger). Western Australia:—12 fathoms, Cape Jaubert, 45 miles W.S.W. (Mjöberg).

Var. HUBERTI *Sowerby.*

*Clathurella spurca* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 156.

*Pleurotoma spurca* Smith, Zool. "Alert," 1884, p. 39, pl. iv., fig. F.F1.

*Pleurotoma huberti* Sowerby, Proc. Zool. Soc., 1893, p. 487. pl. xxxviii., figs. 11, 12.

*Hab.* Queensland:—Port Molle (Coppinger); 13 fathoms, Princess Charlotte Bay; 20 fathoms, Cape Grenville (type); 30 fathoms, Darnley Island (Brazier); 4 to 14 fathoms, Albany Passage; Boyne Bar, Port Curtis (self).

ETREMA TORTILABIA *sp. nov.*

(Plate xlviii., fig. 87.)

*Clathurella donata* Brazier, Proc. Linn. Soc. N.S.W., i., 1874, p. 155 (not *Clavatula donata* Hinds, Zool. "Sulphur," ii., 1844, p. 22, pl. vii., fig. 7).

Shell small, solid, acicular, contracted at the base, and a little excavate below the suture. Whorls eight, three and a half of which form the protoconch, of which the apex is produced and the third whorl is keeled. Colour faded in my examples, but the oral callosities retain a brown or yellow stain. Sculpture:—On the upper whorls are two spirals, and on the last eleven, which become closer and smaller anteriorly; the radials are stout round-backed ribs, which bulge at the periphery of the upper whorls, and are set at seven or eight to a whorl. Aperture:—The mouth is triangular, contracted by a bend of the lip; sinus horizontal, spout-like, with a C section; columella with two or three small transverse plaits; canal short, a little recurved. Length 4·8 mm., breadth 1·6 mm.

This has a general resemblance to *Glyphostoma trigonostoma* Hervier,[76] but the Queensland shell is smaller, tapers more sharply to a point, is more contracted at the sutures, and has fewer spirals.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (type); 5 to 10 fathoms, Hope Island (self); 20 fathoms, Darnley Island (Brazier); 20 fathoms, off Endeavour Reef (McCulloch).

### Lienardia *Jousseaume.*

*Lienardia* Jousseaume, Bull. Soc. Zool. France, ix., 1884, p. 184, type *Clavatula rubida* Hinds.

*Thetidos* Hedley, Mem. Austr. Mus., iii., 1899, p. 472, type *Thetidos morsura* Hedley.

This well marked genus is a characteristic associate of reef corals. Typically the shell is brightly coloured. It is ovate, very solid, with stout undulating radial ribs crossed by sharp elevated cords. Within the lip and on the columella are entering denticules, but the columella denticules are more deep seated than in *Etrema*. The varix has a blunt labial margin; it does not extend a thin broad and wing-like expanse towards the aperture as with *Etrema*. The anal fasciole is traversed by spiral threads and is distinguished by the cessation of the radial sculpture, which does not intrude on a subsutural space. The sinus inclines to a subtubular form. The apex is small, and subulate with one smooth helicoid whorl followed by another glossy whorl with a sharp thread keel on the shoulder. The apex figured (Plate xlix., fig. 102) is from a specimen of *L. rubida* taken by myself under a stone at low tide in Milne Bay, Papua.

Under the subgeneric title of *Acrista*, with *L. punctilla* Hedley for type, I now propose to distinguish a small party of diminutive shells:—*L. cælata* Garrett, *disconica* Hervier, *gaidei* Hervier, *marchei* Jousseaume, *multinoda* Hedley, and *semilineata* Garrett, associated by a sculpture of compressed beads, trigonal aperture, and lop-sided apex.

*Thetidos* may serve for another subordinate group, including species with fewer and more massive labial denticules such as *L. morsura* Hedley, for the reception of which Pease[77] suggested "*Borsonia*."

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[76] Hervier—Journ. de Conch., xliv., 1896 (1897), p. 93, pl. iii., fig. 23.
[77] Pease—Proc. Zool. Soc., 1860, p. 143.

LIENARDIA BERTINIANA *Tapparone Canefri.*

*Clathurella bertiniana* Tapparone Canefri, Bull. Soc. Zool. France, iii., 1878, p. 247, pl. vi., figs. 7, 8. *Id.* Couturier, Journ. de Conch., lv., 1907, p. 131.

*Hab.* Queensland:—Murray Island, Lizard Island, and Rocky Isle, off Cape Flattery (self).

LIENARDIA CORTICEA *sp. nov.*

(Plate xlviii., fig. 89.)

Shell small, solid, ovate-lanceolate, constricted at the sutures. Colour uniform ochraceous-buff. Whorls seven. Sculpture:—The radials increase in number but decrease in size as growth proceeds; on the penultimate are nine broad prominent and discontinuous ribs, which are cut into tubercles by the passage of spirals; on the last whorl are low and faint ribs which vanish on the base; the spirals on the last whorl amount to sixteen elevated coarse and evenly spaced cords, set at their breadth apart; on the penultimate the spirals are three; the persistent fasciole is traversed by two spiral threads, and is not interrupted by the radial sculpture. Aperture:—The mouth is narrow and arcuate; varix low but massive, ornamented by a continuation of the spiral threads; on the free edge of it are seven small denticules; sinus deep and rather wide; canal a mere notch; columella lip with a deeply seated plait, and with three or four superficial transverse plications. Length 5·5 mm., breadth 2·4 mm.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

LIENARDIA FALLACIOSA *sp. nov.*

(Plate xlviii., fig. 90.)

Shell small, subcylindrical, and solid. Colour apparently buff, with a brown band on the suture and another on the base. Adult whorls apparently five, angled on the shoulder and contracted on the base. Sculpture:—On the last whorl there are eight (including the varix) prominent radial ribs, and twelve evenly spaced spiral threads over-ride them. Aperture:—Mouth narrow; varix prominent, extending a limb inwards; canal and sinus wide. Length 4·5 mm., breadth 1·75 mm.

Material for this description is imperfect, consisting of four dead and discoloured shells; it may be supplemented by those who obtain better specimens. This new species is related to *L. fallax* G. and H. Nevill, but is shorter, stouter, and more coarsely sculptured.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (type, self).

LIENARDIA FALLAX *G.* and *H. Nevill.*

(Plate xlviii., fig. 91.)

*Clathurella rugosa* var. *fallax* G. and H. Nevill, Journ. Asiatic Soc., xliv., 1875, p. 87.

*Glyphostoma fallax* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 177.

Identification of unfigured species without access to a type is always a matter of uncertainty. Some Queensland specimens, here regarded as a form of *L. fallax*, agree well with a series from Lifu. By being rather shorter, stouter, and more boldly ribbed, both the above slightly differ from a set from Reunion Island received under the name of *Glyphostoma fallax*. As all my Australian specimens are very worn from the beaches a drawing of a Lifuan shell is here presented.

*Hab.* Queensland:—Rocky Isle and Two Isles, both off Cape Flattery; Green Island (self).

LIENARDIA FARSILIS *sp. nov.*

(Plate xlviii., fig. 92.)

Shell small, very solid, biconical. Colour uniform white. Whorls six. Protoconch of one and a half smooth rather depressed whorls. Sculpture:—Ribs prominent, discontinuous, set eight to a whorl; spirals are fine evenly spaced threads, eleven on the last whorl and four on the penultimate; surface with a secondary sculpture of microscopic grains. Aperture:—Mouth triangular-pyriform, of moderate breadth; varix prominent, lip with a narrow free edge; sinus so shallow as to seem a mere bend from a profile view; looking into the mouth it is made plain by a tubercle on either side; within the lip are five entering plications; the columella has a faint deep-seated fold. Length 4·5 mm., breadth 2 mm.

This species is like a very diminutive *Heterocithara bilineata*.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (type); 5 to 10 fathoms, Hope Island (self); 20 fathoms, off Endeavour Reef (McCulloch); Darnley Island (Brazier).

LIENARDIA GILIBERTI *Souverbie.*

*Pleurotoma giliberti* Souverbie, Journ. de Conch., xxii., 1874, p. 189, pl. vii., fig. 2.

*Borsonia giliberti* Tryon, Man. Conch., vi., 1884, p. 228, pl. xxv., fig. 58.

*Mangilia giliberti* Melvill and Standen, Journ. of Conch., viii., 1895, p. 97.

*Glyphostoma giliberti* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 179.

My specimens from Torres Straits represent a diminutive form two-thirds the length and stouter in proportion than typical Lifuan shells.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

LIENARDIA GRACILIS *sp. nov.*

(Plate xlviii., fig. 93.)

Shell solid, elongate-ovate. Colour pale buff, with a few ferruginous streaks on the varix. Whorls six. Sculpture:—Fasciole area indeterminate; ribs narrow, elevated half the width of their interstices, running undiminished from suture to base, discontinuous from whorl to whorl, nine on the penultimate and eight on the last whorl; the spirals are fine cords that lace the interstices and bead the ribs, four on the penultimate and nine on the last whorl; within the meshes of the major sculpture run fine close filaments. Aperture:—Varix broad and prominent, denticulate on the inner margin by three teeth which decrease in descending order; sinus narrow and shallow; canal short and open. Length 4·5 mm., breadth 2 mm.

*Hab.* Queensland:— Barney Point, Port Curtis (type, Dr. H. L. Kesteven).

LIENARDIA IMMACULATA *Smith.*

(Plate xlviii., fig. 94.)

*Clathurella immaculata* Smith, Journ. Linn. Soc. Zool., xii., 1876, p. 539, pl. xxx., fig. 7.

In the Hargraves Collection of the Australian Museum there is a single specimen labelled "Bungaree Norah." Another series is from the geographically intermediate position of Wreck Reef, Coral Sea. Both agree with a set of Brazier's original series from Tarawa, an island of the Gilbert or Kingsmill Archipelago.

*Hab.* N.S.Wales:—Norah Head (W. H. Hargraves).

LIENARDIA LUTEA *Pease.*

(Plate xlviii., fig. 95.)

*Borsonia lutea* Pease, Proc. Zool. Soc., 1860, p. 143. *Id.* Melvill and Standen, Journ. of Conch., viii., 1897, p. 398.

*Glyphostoma luteum* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 181.

*Mangilia thereganum* Melvill and Standen, Journ. of Conch., viii., 1896, p. 291, pl. x., fig. 33.

It is remarked by Bouge and Dautzenberg how difficult it is to identify a species unfigured and so poorly described as this. Different correspondents have sent me different shells under this name. As a contribution to the subject I add here a figure and description of a shell I collected at Lizard Island, Queensland, and identified by comparison with a shell from Osumi, Japan, sent to me under this name by Mr. H. Fulton.

Shell rather large and thin, fusiform turreted, and contracted at the base. Colour pale buff, with a suffused pale orange band round the base of the shell. Apex wanting in the specimen examined. Sculpture:—Ribs perpendicular, discontinuous, absent on the base and below the suture, set at about sixteen to a whorl; spirals smaller; about eleven lattice the intercostal spaces, four or five finer threads are crowded above the shoulder, and seven beaded cords run across the snout. Aperture:—The vertical and narrow mouth is protected by a massive varix which rises above the suture; edge of lip with eight small denticules; sinus a deep semicircular notch facing a deeply-seated tubercle across the aperture; half way down the columella is a deep-seated, fine, horizontal thread. Length 8·5 mm., breadth 3·5 mm.

*Hab.* Queensland:— Lizard Island; 17 to 20 fathoms, Masthead Island (self).

LIENARDIA MIGHELSI *Iredale* and *Tomlin*.

(Plate xlix., fig. 96.)

*Pleurotoma rugosa* Mighels, Proc. Boston Soc. Nat. Hist., ii., 1845, p. 23. *Id.* Couturier, Journ. de Conch., lv., 1907, p. 130 (not of Lea, Contrib. to Geol., 1833, p. 136, pl. iv., fig. 13; nor of Deshayes, Descr. Coq. Foss. Paris, ii., 1834, Moll., p. 486, pl. xlvi., fig. 20).

*Borsonia rugosa* Pease, Am. Journ. Conch., iv., 1868, p. 105, and vii., 1871, p. 24.

*Clathurella rugosa* Langkavel, Donum Bismarck., 1871, p. 2, pl. i., fig. 5. *Id.* G. and H. Nevill, Journ. Asiat. Soc. Bengal, xliv., 1875, p. 86. *Id.* Tryon, Man. Conch., vi., 1884, p. 297, pl. xix., fig. 57.

*Mangilia rugosa* Melvill and Standen, Journ. of Conch., viii., 1895, p. 97. *Id.* Melvill and Standen, Journ. Linn. Soc., xxvii., 1899, p. 156. *Id.* Melvill and Standen, Proc. Zool. Soc., 1901, p. 444.

*Glyphostoma rugosum* Hedley, Proc. Linn. Soc. N.S.W., xxxii., 1907, p. 484. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 188.

*Lienardia rugosa* Schepman, Siboga Exped., Mongr. xlixe., 1913, p. 438. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 184.

*? Pleurotoma curculio* G. and H. Nevill, Journ. Roy. Asiat. Soc. Ceylon, 1870, p. 42.

*? Clathurella solida* Dunker, Malak. Blatt., xviii., 1871, p. 162.

*? Clathurella cincta* Dunker, *op. cit.*, p. 161, *fide* Garrett in Tryon.

*Lienardia mighelsi* Iredale and Tomlin, Journ. of Conch., xv., 1917, p. 216.

Both the identity and the nomenclature of this species are unsatisfactory. When bestowed by Dr. Mighels the name of *Pleurotoma rugosa* was doubly invalid. His type was lost by fire (Pease, 1868). The only figure that has been published (Langkavel, 1871) was not taken from that

type, and may be incorrect. The names of Nevill and of Dunker, referred here by Garrett, are unsupported by figures. Messrs. Iredale and Tomlin, who disregard Garrett's identifications, revive the species under a changed name. Perhaps it would have been preferable to have allowed Mighel's supposed species to expire under synonymy and to have introduced afresh the species believed to be his.

By the kindness of Mr. W. C. Clapp of the Agassiz Museum, Cambridge, Mass., I am enabled to figure a Tahtian example 7 mm. by 3 mm., from the Pease collection, of the traditional *rugosa*.

*Hab.* Queensland :—Murray Island (Haddon); Masthead Island (self).

### Lienardia multinoda *sp. nov.*

(Plate xlix., fig. 97.)

Shell small, pointed, conical, contracted at the base. Colour light buff to white. Whorls five, of which two are nuclear. Protoconch almost subulate, the initial whorl first planulate, then suddenly and deeply descending, ornamented with minute delicate radial riblets. Sculpture consisting of square meshes, the knotting points of which project as tubercles; on the last whorl are eight spirals; of these there are three small ones on the snout, followed by a wider space than usual, and then by five cords stronger and wider apart; on the penultimate are three and on the antepenultimate two spirals; the radials are ten evenly spaced small sharp ribs, vertical, and continuing from whorl to whorl. Aperture :—The mouth is sinuate, the inner lip smooth, the outer armed with three tubercles; both sinus and canal are broad and shallow. Length 3·5 mm., breadth 1·5 mm.

*Hab.* Queensland :—5 to 8 fathoms, Murray Island (type, self).

### Lienardia nigrocincta *Montrouzier*, var. tricolor *Brazier*.

*Pleurotoma (Defrancia) nigrotincta* (err. typogr.) Souverbie and Montrouzier, Journ. de Conch., xx., 1872, p. 362.

*Pleurotoma (Defrancia) nigrocincta* Montrouzier, *op. cit.*, xxi., 1873, p. 56, pl. iv., fig. 2. *Id.* Fischer, *op. cit.*, xxiv., 1876, p. 151.

*Clathurella nigrocincta* G. and H. Nevill, Journ. Asiat. Soc. Bengal, xliv., 1875, p. 89, pl. vii., fig. 6. *Id.* Hidalgo, Revista Acad. Madrid, i., 1904. p. 342.

*Pleurotoma (Glyphostoma) nigrocincta* Couturier, Journ. de Conch., lv., 1907, p. 131.

*Borsonia nigrocincta* Melvill and Standen, Journ. of Conch., viii., 1897, p. 398.

*Glyphostoma nigrocinctum* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 184.

*Clathurella tricolor* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 158.

*Glyphostoma tricolor* Hedley, Rec. Austr. Mus., iv., 1901, p. 122, pl. xvi., fig. 3.

This species is related to a shell usually, though perhaps incorrectly, known as a large form of *miyhelsi*. From that *L. nigrocincta* is distinguished not only by the yellow band but also by greater breadth and solidity, more prominent sculpture, and fewer stouter spirals. The Queensland form is shorter (5·6 mm.), comparatively narrower, and with two spirals less than the typical form from New Caledonia.

*Hab.* Queensland:—Palm Islands, type of *tricolor* (Brazier); Cape York; Lizard Island; Eagle Island; Two Isles; and Rocky Isle (self).

LIENARDIA PERISCELINA *sp. nov.*

(Plate xlix., fig. 98.)

*Clathurella rava* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 17 (not *Clavatula rava* Hinds, Zool. "Sulphur," ii., 1844, p. 17, pl. v., fig. 8).

Shell solid, narrowly elevate. Colour buff, with a brown line along the suture and another on the base. Whorls eight, inclusive of the protoconch. Sculpture:—The surface is microscopically grained; the radial ribs, which are prominent, perpendicular, and subcontinuous, commence below the suture and gradually vanish on the base; on the last whorl there are nine of these, exclusive of the varix. The penultimate has six and the last whorl seventeen spiral threads; of these the posterior three are small and close together, the next six are strong and evenly spaced, a wider space than usual then occurs in the hollow of the base, followed by three noduled spirals and concluded by five small spirals crowded on the anterior extremity. Aperture narrow, about a third of total length; varix moderately extended, edge thickened and bearing five or six denticules on the inner side; canal a little bent, short, and effuse; columella with from three to six external entering plaits. Length 8 mm., breadth 3·5 mm.

This shell has some likeness to the figure of *Pleurotoma compta* Reeve,[78] but is of more slender contour with bolder spirals.

*Hab.* Queensland:—12 fathoms, Torres Straits (type, Brazier); 5 to 8 fathoms, Murray Island; 4 to 14 fathoms, Albany Passage (self).

LIENARDIA PUNCTILLA *sp. nov.*

(Plate xlix., fig. 99.)

Shell small, solid, lanceolate. Colour dull white, with an orange line in each of the principal interstices. Whorls seven, of which two compose the protoconch. The initial whorl is turbinate, smooth, and wound so obliquely as to overhang the next on one side; the second is also smooth, with a peripheral thread keel. Sculpture:—There are six perpendicular

[78] Reeve—Conch. Icon., i., 1845, pl. xxxii., fig. 292.

subcontinuous radial ribs; these are crossed by cords which project on the summits of the ribs, and which amount to nine on the last whorl and four on the penultimate. Aperture trigonal, with a short open canal and a wide effuse sinus; the varix projects a free limb towards the mouth; on the columella are three transverse plaits, which lengthen in ascending order. Length 4·3 mm., breadth 2 mm.

This is nearly related to *L. brachyspira* Hervier. From Lifuan specimens of that form it differs by more slender contour, more contraction at the sutures, the ribs are more prominent, and the spirals more distinctly bridge the inter-radial hollows. For it is suggested the subgeneric group of *Acrista*.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (type, self).

LIENARDIA RALLA *sp. nov.*

(Plate xlix., fig. 100.)

Shell small, solid, ovate-lanceolate, base constricted, snout recurved, spire turreted, and apex mucronate. Whorls eight, of which three and a half compose the protoconch. Colour pale buff, with a pale orange zone on the base. Sculpture:—Ribs set at about ten to a whorl, prominent, perpendicular, slightly interrupted from whorl to whorl at the suture, comparatively bolder on the upper whorls, and vanishing on the base; the spirals are close set cords crossing both ribs and their interstices, nodulous on the snout—on the last whorl twelve, and on the penultimate four. Aperture:—Mouth narrow, vertical; varix not prominent, edge of lip with six small interior denticules; sinus subtubular; columella with a slight deeply-seated fold. Length 5 mm., breadth 3 mm.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (type, self).

LIENARDIA RHODACME *Melvill* and *Standen.*

*Mangilia (Glyphostoma) rhodacme* Melvill and Standen, Journ. of Conch., viii., 1896, p. 288, pl. ix., fig. 29, and 1897, p. 401.

*Glyphostoma rhodacme* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 186.

*Hab.* Queensland:—Two Isles, off Cape Flattery (self):

LIENARDIA ROSELLA *sp. nov.*

(Plate xlix., fig. 101.)

Shell small, solid, ovate-pointed. Colour rose-pink, with a chestnut-brown band below the suture, an indistinct pale zone on the periphery, and a faint brown line on the base. Whorls seven, including the protoconch; the second whorl of the latter is not keeled, and is more produced than in *L. rubida*. Sculpture:—The radial ribs are broad, rather prominent, and undulating; they commence below the fasciole and cease on

the base; on the last whorl there are nine ribs including the varix; spaced spiral cords amount to twelve on the last whorl and to six on the penultimate; on the brown fasciole are fine shagreen markings. Aperture:—The mouth is narrow, with four small, close, deep-seated columella folds and three blunt teeth within the outer lip; varix moderate; canal short, as wide as the aperture. Length 5 mm., breadth 2·5 mm.

At first glance this appears to be a dwarf form of *L. rubida*, but the different apex distinguishes it as another species.

*Hab.* Queensland:—Two Isles, off Cape Flattery (type, self); Wreck Reef, Coral Sea (Brazier).

### Lienardia roseotincta *Montrouzier.*

*Pleurotoma (Clathurella) roseotincta* Souverbie and Montrouzier, Journ. de Conch., xx., 1872, p. 361. *Id.* Montrouzier, *op. cit.*, xxi., p. 55, pl. iv., fig. 1. *Id.* Semper, Verh. Ver. Hamburg, ii., 1876, p. 202.

*Clathurella roseotincta* Hidalgo, Revist. Acad. Madrid, i., 1904, p. 342. *Id.* Tapparone-Canefri, Bull. Soc. Zool. France, iii., 1878, p. 247.

*Glyphostoma roseotinctum* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 187.

*? Clathurella exquisita* G. and H. Nevill, Journ. Asiat. Soc. Bengal, xliv., 1875, p. 87.

*Hab.* Queensland:—Lizard Island (self). Western Australia:—Bernier Island, Sharks Bay (Henn).

### Lienardia rubida *Hinds.*

(Plate xlix., fig. 102.)

*Clavatula rubida* Hinds, Proc. Zool. Soc., 1843, p. 39, and Zool. "Sulphur," ii., 1844, p. 18, pl. vi., fig. 6.

*Pleurotoma rubida* Reeve, Conch. Icon., i., 1845, pl. xxv., fig. 220.

*Defrancia rubida* Schmeltz, Mus. Godeffroy, Cat. iv., 1869, p. 90. *Id.* M'Andrew, Ann. Mag. Nat. Hist. (4), vi., 1870, p. 435.

*Lienardia rubida* Jousseaume, Bull. Soc. Zool. France, ix., 1884, p. 185.

*Mangilia rubida* Melvill and Standen, Journ. of Conch., viii., 1897, p. 398. *Id.* Sturany, Pola Exped. Moll., 1903, p. 251, pl. vii., fig. 3. *Id.* Tryon, Man. Conch., vi., 1884, p. 271, pl. xv., fig. 34.

*Glyphostoma rubidum* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 187. *Id.* Shirley, Proc. Roy. Soc. Queensland, xxiv., 1913, p. 56.

*Clathurella rubida* Hidalgo, Revist. Acad. Madrid, i., 1904, p. 342.

This species is the type of the genus *Lienardia*. The apex here figured is drawn from a specimen which I took alive under a stone at Milne Bay, Papua.

*Hab.* Queensland:—Cape York (Shirley).

### Lienardia strombilla *Hervier*.

*Glyphostoma strombillum* Hervier, Journ. de Conch., xliii., 1895, p. 151, and xliv., 1896, p. 83, pl. iii., fig. 22. *Id.* Bouge and Dautzenberg, Journ. de Conch., xli., 1913 (1914), p. 189. *Id.* Melvill and Standen, Journ. of Conch., viii., 1897, p. 401. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxxii., 1907, p. 484.

*Hab.* Queensland:—17 to 20 fathoms, Mast Head Island; 5 to 8 fathoms, Murray Island (self).

### Lienardia vultuosa *Reeve*.

*Pleurotoma vultuosa* Reeve, Proc. Zool. Soc., 1845, p. 116, and Conch. Icon., i., 1845, pl. xxx., fig. 273.

*Lienardia vultuosa* Jousseaume, Bull. Soc. Zool. France, ix., 1884, p. 185.

*Clathurella vultuosa* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 51. *Id.* Hidalgo, Revist. Acad. Madrid, i., 1904, p. 343.

*Glyphostoma vultuosum* Hedley, Proc. Linn. Soc. N.S.W., xxxii., 1907, p. 484. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 191.

*Hab.* Queensland:—Mast Head Island (self).

### Hemilienardia *Boettger*.

*Hemilienardia* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 52, type *Pleurotoma malleti* Recluz.

This genus is readily distinguishable from *Lienardia* by the apex. The protoconch consists of a cone of three and a half smooth rounded whorls. The succeeding adult whorls not only differ in sculpture, but are wound in so divergent a spiral and increase at so disproportionate a rate as to project that protoconch in a mucronate point. In the colour of the type the contrast is even more violent, as there the brilliant snow-white apex against the deep rose-red is visible to the naked eye. Another generic feature is an opaque peripheral zone. The deep-seated columella folds, so conspicuous in *Lienardia*, are here less developed. The species are small and usually brightly coloured. They frequent the upper zone of coral reefs.

### Hemilienardia apiculata *Montrouzier.*

*Pleurotoma apiculata* Montrouzier, Journ. de Conch., xii., 1864, p. 264, pl. x., fig. 2.

*Glyphostoma apiculata* Semper, Verh. Ver. Hamburg, ii., 1876, p. 202. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 171.

*Lienardia apiculata* Jousseaume, Bull. Soc. Zool. France, ix., 1884, p. 185.

*Clathurella (Hemilienardia) apiculata* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 52. *Id.* Hidalgo, Revist. Acad. Madrid, i., 1904, p. 340.

*Clathurella apiculata* var. *minor* G. and H. Nevill, Journ. Asiat. Soc. Bengal, xliv., 1875, p. 88, pl. vii., fig. 3.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island; Two Isles, off Cape Flattery (self).

### Hemilienardia apiculata var. albostrigata *Baird.*

*Defrancia albostrigata* Baird, Cruise "Curaçoa," 1873, p. 434, pl. xxxvii., figs. 3, 4.

*Mangilia notopyrrha* Melvill and Standen, Journ. of Conch., viii., 1896, p. 288, pl. ix., fig. 28. *Id.* Tomlin, Journ. of Conch., xiii., 1910, p. 43.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

### Hemilienardia calcicincta *Melvill* and *Standen.*

*Mangilia (Glyphostoma) calcicinctus* Melvill and Standen, Journ. of Conch., viii., 1895, p. 95, pl. iii., fig. 21.

*Glyphostoma calcicinctum* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 172.

*Hab.* Queensland:—Rocky Isle, off Cape Flattery (self).

### Hemilienardia goubini *Hervier.*

(Plate xlix., fig. 103.)

*Glyphostoma goubini* Hervier, Journ. de Conch., xliii., 1895 (1896), p. 149, and xliv., 1896, p. 75, pl. ii., fig. 17. *Id.* Bouge and Dautzenberg, *op. cit.*, lxi., 1914, p. 179.

*Mangilia goubini* Melvill and Standen, Journ. of Conch., viii., 1897, p. 400.

Specimens from Torres Straits are smaller than typical Lifuan examples, being 4 mm. in length as against 5·5 mm.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

HEMILIENARDIA HERSILIA *sp. nov.*

(Plate xlix., fig. 104.)

Shell small, ovate-pointed, contracted at the sutures and at the base. Colour dull-white, an opaque white band at the back of the last whorl. Whorls seven, of which three are apical. Sculpture:—The radials are discontinuous, vertical, moderately prominent ribs, which diminish at the sutures and vanish on the base, and are set at ten to a whorl; the spirals are prominent cords which over-ride the ribs, four on the penultimate and twelve on the last whorl; of these the anterior five run across the snout, and are beaded. Aperture:—Mouth sinuate; varix composed of a double rib, the free limb traversed by eight spirals and the edge armed by four tubercles, becoming larger as they ascend, the lowest double; columella with two deep-seated plications; sinus and canal broad and shallow. Length 3·5 mm., breadth 1·7 mm.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (type, self); Palm Island (self).

HEMILIENARDIA HOMOCHROA *sp. nov.*

(Plate xlix., fig. 105.)

Shell small, solid, elongate-ovate. Colour entire deep rose pink, except an opaque white zone which is at first one spiral broad and at last three rows broad. Whorls eight, first three and a half apical, rapidly increasing. Sculpture:—The radials are twelve prominent round-backed ribs, ceasing on the base, discontinuous from whorl to whorl, and broader than their interstices; the spirals amount to sixteen on the last whorl, and to four on the penultimate; they are stout close set cords which traverse both ribs and interstices and continue on the base; there they carry large beads in continuation of the axes of the ribs; the whole surface is also microscopically shagreened. Aperture:—The mouth is vertical, contracted by the limb of the varix, the free edge of which is armed with five prominent tubercles; columella excavate and twisted; sinus deep and narrow. Length 5 mm., breadth 2·5 mm.

This is an Australian representative of *H. malleti* Recluz from the tropical Pacific. It is easily and definitely distinguished by having the protoconch coloured like the rest of the shell instead of being a brilliant white like that of *malleti*.

An example of this was found by Mr. J. Brazier in a rock pool, between tide marks, at Little Coogee, near Sydney, 19th July, 1895. Though immature it is quite sharp and fresh, and had evidently lived where it was found. Still I should consider that this species is not an ordinary resident of so southern a latitude, but that this individual was a waif swept down by the Notonectian current, perhaps in a larval state.

*Hab.* Queensland:—Two Isles, off Cape Flattery (type, self); Green Island (self). N.S.Wales:—Little Coogee (Brazier).

HEMILIENARDIA OCELLATA *Jousseaume.*

*Lienardia ocellata* Jousseaume, Bull. Soc. Zool. France, ix., 1884, p. 186, pl. iv., fig. 4.

*Mangilia ocellata* Melvill and Standen, Journ. of Conch., viii., 1897, p. 401.

*Glyphostoma ocellatum* Hedley, Proc. Linn. Soc. N.S.W., xxxiv., 1909, p. 455. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 184.

*Hab.* Queensland:—Green Island (self).

HEMILIENARDIA THYRIDOTA *Melvill and Standen.*

*Mangilia (Glyphostoma) thyridota* Melvill and Standen, Journ. of Conch., viii., 1896, p. 292, pl. x., fig. 35, and 1897, p. 402.

*Glyphostoma thyridota* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 190.

*Hab.* Queensland:—Two Isles, off Cape Flattery (self).

HETEROCITHARA *gen. nov.*

A genus of the *Mangiliinæ* related to *Paraclathurella.* Shell small, biconical, solid. Numerous perpendicular riblets extend from the suture to the base, and are over-run by smaller spiral cords, between which are dense microscopic hair lines. No fasciole; varix larger than the ribs; sinus small. Within the lip are a series of denticules. Type *Clathurella bilineata* Angas.

The Australian Tertiary fossils *Mangilia bidens* Tenison-Woods and *Clathurella obdita* Harris may be included here.

HETEROCITHARA BILINEATA *Angas.*

(Plate xlix., fig. 106.)

*Clathurella bilineata* Angas, Proc. Zool. Soc., 1871, pp. 18, 93, pl. i., fig. 23.

*Mangilia bilineata* Gatliff and Gabriel, Proc. Roy. Soc. Victoria, xxv., 1912, p. 170.

The types are five specimens from Port Jackson presented to the British Museum by G. F. Angas.

*Hab.* N. S. Wales:—Sow and Pigs Reef, Port Jackson (type, Angas); Lake Macquarie (Cherry); Port Stephens (Museum Expedition). Victoria:—Port Albert (Worcester).

HETEROCITHARA CONCINNA *sp. nov.*

(Plate xlix., fig. 107.)

Shell small, slender, cylindro-fusiform. Colour pale buff, with a few broken ferruginous lines on the back of the last whorl, on the varix, and in the subsutural intercostal spaces. Whorls seven, rounded, constricted at the suture, and subangled at the shoulder. Protoconch of two and a half whorls, smooth, symmetrical, conical. Sculpture:—Ribs prominent, narrow, as broad as their interstices, proceeding from suture to base, but discontinuous from whorl to whorl; spirals are sharp widely spaced threads traversing both ribs and interstices, but more conspicuous in the latter, amounting to four on the penultimate and thirteen on the body whorl, the one on the shoulder being more important than the rest; besides the major spiral other close and minute threads over-run the fasciole area. Aperture:—Mouth wide, unarmed; varix narrow but elevated; sinus deeply excavate; canal short and wide. Length 5 mm., breadth 1·5 mm.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

HETEROCITHARA ERISMATA *sp. nov.*

(Plate xlix., fig. 108.)

Shell ovate-elliptical, very solid. Colour pale cream, spotted with square dots of raw sienna upon the ribs between the spirals. Whorls six, plus the protoconch. Sculpture:—Surface rather glossy, with fine radial microscopic scratches; radials prominent, close-set, discontinuous ribs, wider spaced on the back of the last whorl, amounting to nine on the penultimate; the spirals are chiefly apparent as beads upon the ribs, but suddenly enlarge upon the snout to massive tubercles; on the last whorl there are nine, on the penultimate three, and on the antepenultimate two. Aperture:—Mouth narrow, vertical; varix prominent, the spirals that cross it are magnified into seven outstanding knuckles; sinus a deep U-shaped incision in the varix; canal very short; no plications or denticules within the outer lip or on the columella. Length 7·5 mm., breadth 3·5 mm.

This species has a general resemblance to *Mangelia bascauda*,[79] but differs by larger size, more prominent radials, and especially in the absence of teeth in the aperture.

*Hab.* Queensland:—Lady Elliot Island (type, Miss Lovell); Caloundra (Prof. T. H. Johnston); Facing Island, Port Curtis (Dr. H. L. Kesteven).

HETEROCITHARA HIRSUTA *De Folin.*

*Pleurotoma hirsutum* De Folin, Les Meleagrinicoles, 1867, p. 59, pl. v., fig. 16.

*Mangilia hirsuta* Tryon, Man. Conch., vi., 1884, p. 270, pl. xxx., fig. 75.

[79] Melvill and Standen—Journ. of Conch., viii., 1896, p. 279, pl. ix., fig. 13.

*Clathurella hirsuta* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 198.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self); Mast Head Island (self).

HETEROCITHARA RIGORATA *Hedley.*

(Plate l., figs. 109, 110.)

*Mangilia rigorata* Hedley, Proc. Linn. Soc. N.S.W., xxxiv., 1909, p. 459, pl. xliv., figs. 98, 99.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island (type, self); 20 fathoms, Darnley Island ("Chevert").

HETEROCITHARA SERILIOLA *sp. nov.*

(Plate l., fig. 111.)

Shell subcylindrical, turreted, apex pointed. Colour undetermined. Whorls eight. Sculpture:—Ribs narrow, elevated, round-backed, alternating from whorl to whorl, in-bent at the summit, the shaft perpendicular and the base out-curved, thirteen on the penultimate and eleven on the last whorl, the rib before the varix evanescent; spirals are prominent cords crossing both ribs and interspaces, on the upper whorls three or four, on the last twelve; the uppermost spiral accentuates the shoulder angle; two or three on the base are thicker than the rest; the interspaces have microscopic grains set in canvas pattern. Aperture:—The mouth is long, narrow, and unarmed; varix larger than the ribs, rising at the insertion, the edge of its outer limb crenulated by spirals; sinus rather broad; columella perpendicular; canal short and broad. Length 9 mm., breadth 3 mm.

This is related to *H. rigorata*, but is easily distinguished by its far larger size. *P. gracilenta* is comparable in size, but differs by its blunt apex, slighter ribs, and more fusiform contour.

*Hab.* Queensland:—12 fathoms, Torres Straits (Brazier).

HETEROCITHARA TRANSENNA *sp. nov.*

(Plate l., fig. 112.)

Shell small, very solid, ovate-acuminate, turreted. Colour faded to a uniform gray. Whorls six. The protoconch is composed of two small smooth elevated whorls. Sculpture:—The radials are prominent perpendicular discontinuous ribs, which are dislocated at but continue on the snout; they are nodose at the passage of the spirals, and wider spaced on the last whorl, being set at the rate of ten on the penultimate and eight on the last whorl; the spirals are strong evenly-spaced threads, nine on the last whorl and three on the one before. Aperture:—Varix broad and prominent, almost closing up the mouth; sinus open and rather shallow; canal a mere notch. Length 5 mm., breadth 2 mm.

This has some resemblance to *Mangilia diatula*,[80] but the sculpture of the Queensland shell is much harsher and the mouth narrower.

*Hab.* Queensland:—4 to 14 fathoms Albany Passage (type); 5 to 10 fathoms, Hope Island; Two Isles, off Cape Flattery; Hinchinbrook Island (self); Cape Grenville and Darnley Island ("Chevert").

### Heterocithara tribulationis *Hedley.*

*Glyphostoma tribulationis* Hedley, Proc. Linn. Soc. N.S.W., xxiv., 1909, p. 454, pl. xlii., fig. 81.

This species is related to *H. zebuensis* Reeve, but is stouter and more strongly featured.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island (type); 5 to 8 fathoms, Murray Island (self); 20 fathoms, off Endeavour Reef (McCulloch).

### Heterocithara zebuensis *Reeve.*

(Plate l., fig. 113.)

*Mangelia zebuensis* Reeve, Conch. Icon., iii., June 1846, pl. viii., fig. 68, and Proc. Zool. Soc., August 1846, p. 65. *Id.* Tryon, Man. Conch., vi., 1884, p. 266 (as *M. derelicta*). *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 180.

*Mangilia cebuensis* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 44.

*Cithara zebuensis* Hidalgo, Revist. Acad. Cienc. Madrid, 1904, p. 839.

My figure is derived from a Hope Island specimen which was identified by comparison with Singapore material kindly given to me under this name by Mr. J. R. le B. Tomlin.

*Hab.* Queensland:—Mornington Island; 4 to 14 fathoms, Albany Passage; Rocky Isle, off Cape Flattery; 5 to 10 fathoms, Hope Island; 15 fathoms, Palm Island; 17 to 20 fathoms, Mast Head Island (self).

### Anacithara *gen. nov.*

A genus of the *Mangiliinæ* proposed to embrace small shells which resemble *Eucithara* in their upper whorls and sculpture, but differ in their wide aperture, devoid of teeth on either side. Type *Mangilia naufraga* Hedley.

Besides the Australian species subsequently enumerated, the following exotic species may be assigned to *Anacithara*:—*Mangilia dulcinea* Melvill and Standen, 1895; *Drillia ione* Melvill and Standen, 1896; and *Mangilia osumiensis* Sowerby, 1913.

[80] Hervier—Journ. de Conch., xlv., 1897 (1898), p. 59, pl. viii., fig. 7.

ANACITHARA BREVICOSTATA *sp. nov.*

(Plate l., fig. 114.)

Shell small, thin, elongate-ovate. Colour pale buff, with a narrow subsutural band. Whorls rounded, six, including the protoconch, which is smooth, turbinate, slightly tilted, and of two whorls. Sculpture:—The ribs rather prominent, rounded, broader than their interstices, on the penultimate nine, on the last whorl ten; these are spaced more widely than those above, commencing at the suture and terminating rather abruptly at the periphery; the spirals even, comparatively coarse, and close-set threads, which over-run the whole shell. Aperture wide, unarmed, varix slight; sinus indistinct; canal a mere notch. Length 4·5 mm., breadth 2 mm.

*Hab.* Queensland:—17 to 20 fathoms, Mast Head Island (self).

ANACITHARA CAELATURA *sp. nov.*

(Plate l., fig. 115.)

Shell fusiform, small, rather solid. Colour buff, with an indistinct pale ferruginous band on the shoulder. Whorls six, rounded above, constricted at the sutures, and contracted at the base. Sculpture:—The ribs are perpendicular, narrow, widely spaced, not continuing from whorl to whorl; on the penultimate nine, on the last eight; fine even close-set spirals over-run the whole shell. Aperture wide, unarmed; varix high and broad; sinus wide and rather deep; canal short and broad. Length 4·5 mm., breadth 2 mm.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

ANACITHARA CONATA *Hedley.*

*Mangelia naufraga* var. *conata* Hedley, Proc. Linn. Soc. N.S.W., xxxiv., 1909, p. 458, pl. xliv., fig. 94.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island (type); 17 to 20 fathoms, Mast Head Island (self).

ANACITHARA EXQUISITA *sp. nov.*

(Plate l., fig. 116.)

Shell small, biconical. Colour uniform pure white. Whorls six, turreted. Protoconch two smooth, elevated, symmetrical whorls. Sculpture:—Ribs rather low and rounded, discontinuous from whorl to whorl; on the penultimate there are eight, which become shorter, lower, wider spaced, and tend to disappear; fine, dense, even spiral threads over-run the whole surface. Aperture open, unarmed; varix well developed; sinus a semicircular incision; canal open, short. Length 4·5 mm., breadth 2 mm.

*Hab.* Queensland:—17 to 20 fathoms, Mast Head Island (self).

ANACITHARA HEBES *sp. nov.*

(Plate l., fig. 117.)

Shell solid, biconical, small. Colour uniform white. Whorls six, and angled at the shoulder. Sculpture:—Low, rounded, and close-set ribs, numbering eleven on the penultimate, and becoming evanescent on the last whorl; spirals are close fine threads, nearly uniform in size and spacing, crossing ribs and interstices alike, and extending over the whole whorl from the suture downwards, numbering about six on the penultimate and twenty-two on the last whorl. Aperture wide, unarmed; varix slight; sinus shallow; canal a mere notch. Length 5·5 mm., breadth 2 mm.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

ANACITHARA HERVIERI *sp. nov.*

(Plate l., fig. 118.)

Shell small, elongate, turreted. Colour dull white; protoconch pale primrose yellow. Whorls six. Sculpture:—Ribs low, distant, perpendicular, angled at the shoulder, running from suture to base, but not continuing from one whorl to another; on the penultimate seven; spirals very slender and widely-spaced threads, between which are a few still finer threads; of the major series there are twelve on the last and four on the penultimate whorl. Aperture open, unarmed save for a tubercle on either side of the sinus; varix well developed; sinus wide and shallow; canal merely a notch. Length 5 mm., breadth 2 mm.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

ANACITHARA LEPTALEA *sp. nov.*

(Plate l., fig. 119.)

Shell small, solid, narrowly ovate. Colour uniform white. Whorls six, including a smooth two-whorled protoconch. Sculpture:—Prominent ribs, parted by their own breadth, are set at nine or ten to a whorl; both ribs and interstices are traversed by a series of uniform sharp spiral threads—six on the penultimate and thirteen on the last whorl. Aperture narrow, protected by a broad and high varix; canal short and open; sinus a semicircular notch; there are no denticules on the lips, but a deeply-seated fold is just visible on the columella. Length 3·5 mm., breadth 1·5 mm. Compared with *Mangilia nanisca* this is broader, with more numerous ribs and coarser spirals.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

ANACITHARA NANISCA *Hervier.*

*Mangilia nanisca* Hervier, Journ. de Conch., xlv., 1897, pp. 55, 186, pl. viii., fig. 5. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 153.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

ANACITHARA NAUFRAGA *Hedley.*

*Mangilia naufraga* Hedley, Proc. Linn. Soc. N.S.W., xxxiv., 1909, p. 458, pl. xliv., fig. 93.

*A. naufraga* is like *A. dulcinea* Melvill and Standen, from Lifu, but appears to differ specifically by stouter build and bolder ribs.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island (type); 5 to 8 fathoms, Murray Island; 17 to 20 fathoms, Mast Head Island (self).

ANACITHARA PROPINQUA *sp. nov.*

(Plate l., fig. 120.)

Shell small, rather solid, ovate-fusiform. Colour uniform pale buff or uniform pale lilac. Whorls six. Protoconch slightly tilted. Sculpture:—Ribs rather prominent, rounded, set their own breadth apart, discontinuous from whorl to whorl, those on the last whorl gradually vanishing below the periphery; nine on the penultimate; fine, close, even spiral threads over-run the whole shell. Aperture wide, unarmed; varix massive; sinus rather shallow; canal short and wide. Length 4·2 mm., breadth 2 mm.

Related to *A. naufraga* Hedley, from which it differs by being smaller, less cylindrical, and having slighter ribs.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

ANACITHARA RISSOINA *sp. nov.*

(Plate l., fig. 121.)

Shell rather solid, elongate, rounded at the base, blunt at the apex. Colour dull white, with faint orange spots on the back of the last whorl. Whorls six, rounded and constricted at the sutures. Sculpture:—The ribs are rounded and placed their breadth apart, alternate from whorl to whorl, undulate the suture, extend to the base, and number twelve on the penultimate; the spirals are fine threads of uniform size and spacing, crossing both ribs and interstices, extending over the whole whorl except the fasciole area, numbering eight on the penultimate and twenty on the last whorl. Aperture wide, unarmed; varix broad and high; sinus wide and shallow; canal a mere notch. Length 6 mm., breadth 2 mm.

This species resembles *Clathurella lita* Melvill and Standen,[81] but is much larger, broader in proportion to length, with ribs wider apart, and the spirals more numerous. From *A. naufraga* Hedley it differs by greater length and less breadth, by less prominent, closer, and more numerous ribs, by coarser and more widely-spaced spirals.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (self).

[81] Melvill and Standen—Journ. of Conch., viii., 1896, p. 294, pl. x., fig. 39.

ANACITHARA ROBUSTA *sp. nov.*

(Plate li., fig. 122.)

Shell small, solid, biconical. Colour dull white, apex pink. Whorls six, including the protoconch. Sculpture:—Ribs prominent, discontinuous from whorl to whorl, projecting at the periphery and gradually vanishing on the base; nine on the penultimate; very many and close spiral threads over-run both ribs and interstices; two spirals, larger and wider spaced than the rest, traverse the periphery and ascend the spire. Aperture:—The mouth is protected by a thick varix, from which a free limb, insinuate at the base, projects into the aperture; sinus semicircular; canal short and open. Length 5·5 mm., breadth 2 mm.

*Hab.* Queensland:—4 to 14 fathoms, Albany Pass (type); 5 to 8 fathoms, Murray Island; 5 to 10 fathoms, Hope Island (self).

ANACITHARA STRICTA *sp. nov.*

(Plate li., fig. 123.)

Shell subcylindrical, blunt at either end. Colour uniform pale buff. Whorls five and a half. Protoconch depressed, asymmetrical. Sculpture:—Ribs slight and inconspicuous, their own breadth apart, those on the last whorl descending from the suture only to the periphery; fourteen on the penultimate, and as many on the last whorl; these are dominated by the spirals, which are coarse, wide-spaced, and amount to eighteen on the last whorl. Aperture wide and unarmed; varix slight; sinus indistinct; canal short and wide. Length 4·5 mm., breadth 1·5 mm.

*Hab.* Queensland:—17 to 20 fathoms, Mast Head Island (self).

ANACITHARA TUMIDA *sp. nov.*

(Plate li., fig. 124.)

Shell ovate, thin. Colour uniform white, or white with narrow ochraceous spiral lines. Whorls inflated, six, including the protoconch, which is smooth, subdiscoidal, tilted to one side, and projecting over the next whorl. Sculpture:—Ribs broad and rounded, well spaced, discontinuous from one whorl to another, nine on the penultimate, gradually vanishing towards the base; both ribs and interstices over-run by fine dense spiral threads. Aperture wide; lip simple. Length 5·3 mm., breadth 2 mm.

*Hab.* Queensland:—20 fathoms, Endeavour Reef (McCulloch).

ANACITHARA UNDATICOSTA *Reeve.*

*Pleurotoma undaticosta* Reeve, Conch. Icon., i., 1845, pl. xxxi., fig. 284, and Proc. Zool. Soc., 1845 (1846), p. 117.

*Mangelia undaticosta* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 161.

This identification of the "Chevert" shells is doubtful.

*Hab.* Queensland:—11 fathoms, Cape York (Brazier).

PARACLATHURELLA *Boettger.*

*Paraclathurella* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 56, type *Pleurotoma gracilenta* Reeve.

In *Paraclathurella* Dr. Boettger established a valid genus for *P. gracilenta* and its varieties, but his classification appears to have depended on superficial characters of subcylindrical form and delicate sculpture in which spirals exceed radials, for his judgment was depreciated by the addition of the following incongruous species—*P. axis* Reeve, *eximia* Reeve, *insculpta* Adams and Angas, *lirata* Reeve, *rissoides* Reeve, and *subula* Reeve—here distributed among *Hemidaphne* and *Guraleus*.

*Paraclathurella* has the first two whorls (protoconch) depressed-turbinate, quite smooth, the initial one a little tilted. Sculpture commences with the advent of four minutely-beaded spirals. Radials follow, develop a reticulation, become wider spaced, and gradually predominate, thus introducing the adult sculpture. A secondary microscopic sculpture later occurs of grained threads. Varix narrow, in which is excavated a squarely U-shaped sinus; outer lip with a narrow free edge; no teeth on columella or lip.

These characters I read as indicating a relationship with *Eucithara;* from that *Paraclathurella* is distinguished by elongate form, radial sculpture, and toothless mouth.

PARACLATHURELLA ADITICOLA *sp. nov.*

(Plate li., fig. 125.)

Shell of moderate size for the genus, cylindro-fusiform. Whorls seven. Colour uniform buff. Sculpture:—Radials consist of distant, low, round-backed ribs, discontinuous from whorl to whorl, undulating the suture, and set about eight to a whorl; on the upper whorls the ribs are comparatively closer and higher; on the last whorl are about twenty fine grooves, cutting the surface into flat-topped spirals; on the penultimate there are about ten of these. Aperture:—The mouth is elongate-pyriform, without teeth on either side; no varix; outer lip thin, and scarcely inflected at the sinus; canal a notch. Length 8 mm., breadth 2·5 mm.

Compared with *P. gracilenta* var. *portia* Smith, the shape of the novelty is more fusiform, and the whorls increase slower, the spirals smaller and more numerous, but the radials are fewer and more prominent.

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (type); Mapoon (self).

PARACLATHURELLA CLOTHONIS *sp. nov.*

(Plate li., fig. 126.)

Shell small, slender, cylindro-fusiform. Colour uniform dull grey. Whorls six, of which half comprise the protoconch, the first two whorls of which are smooth, the next sculptured with radial arcuate wrinkles.

Sculpture:—The adult shell is wound round and lengthwise, as it were, with sharp threads, which produce a point at intersection and enclose deep square meshes; the spirals are thirteen on the last whorl and four on the penultimate; the radials are sixteen on the last whorl. Aperture:—The mouth is rather wide; columella unarmed and excavate; sinus broad and shallow; outer lip extending a thin edge; canal a mere notch. Length 4 mm., breadth 1·8 mm.

*Hab.* Queensland:—8 fathoms, Weary Bay (type); 15 fathoms, Palm Island; 4 to 14 fathoms, Albany Passage; 5 fathoms, Horsey River (self); 10 fathoms, Cape Sidmouth (Henn); 20 fathoms, off Endeavour Reef (McCulloch).

PARACLATHURELLA GRACILENTA *Reeve.*

*Pleurotoma gracilenta* Reeve, Conch. Icon., i., 1843, pl. xiv., fig. 114, and Proc. Zool. Soc., 1843 (1844), p. 184. *Id.* Smith, Proc. Zool. Soc., 1879, p. 195, pl. xix., fig. 24, and Zool. Coll. "Alert," 1884, p. 39.

*Mangelia gracilenta* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 161. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxxiv., 1909, p. 456, pl. xliv., fig. 91. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 170, pl. ix., fig. 12.

*Clathurella gracilenta* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 57. *Id.* Hidalgo, Revist. R. Acad. Cien. Madrid, i., 1904, p. 341.

*Pleurotoma contracta* Reeve, Conch. Icon., i., 1843, pl. xiv., fig. 116, and Proc. Zool. Soc., 1843 (1844), p. 185.

*Mangelia contracta* Brazier, Proc. Linn. Soc., i., 1876, p. 161.

*Pleurotoma fusoides* Reeve, Conch. Icon., i., 1846, pl. xxxviii., fig. 439, and Proc. Zool. Soc., 1846, p. 6.

*Pleurotoma portia* Smith, Ann. Mag. Nat. Hist. (5), xiv., 1884, p. 317.

*Cythara elegantissima* Melvill, Ann. Mag. Nat. Hist. (7), xii., 1903, p. 319, pl. xxiii., fig. 13.

*Mangelia elegantissima* Schepman, Siboga Exped. Monogr., xlixe., 1913, p. 433.

*Hab.* Queensland:—32 to 36 fathoms, Arafura Sea ("Alert"); 20 fathoms, Darnley Island; 11 fathoms, Cape York (Brazier); 10 fathoms, Cape Sidmouth (Henn); 5 to 10 fathoms, Hope Island; 15 fathoms, Palm Island; Mapoon; off Horsey River (self).

PSEUDORHAPHITOMA *Boettger.*

*Pseudorhaphitoma* Boettger, Nachr. deut. Malak. Gesell., xxvii., 1895, p. 56, type *Mangelia fairbanki* G. and H. Nevill, Journ. Asiat. Soc. Bengal, xliv., 1875, pt. ii., p. 85, pl. vii., fig. 2.

Besides his type Dr. Boettger also included in his new section *Drillia fortilirata* Smith, *Clathurella obeliscus* Reeve, and *Mangelia hexagonalis*

Reeve. Thus was indicated a group, related to *Eucithara*, of elongate, many whorled shells, uniform brown or white in colour, the mouth contracted by a sharp free lip springing from a prominent varix, within which are some entering ridges, and above these a well-cut sinus. Sculpture:—Prominent and continuous longitudinal ribs, crossed by fine, and sometimes coarse, spiral grained threads.

Some West American species which have been referred to *Agathotoma* Cossmann[82] by Dr. Dall[83] have much resemblance to *Pseudorhaphitoma*.

Misapprehension about the type of the genus seems to be general, for I have received from correspondents two different species under the name of *M. fairbanki*, neither of which agrees with Nevill's figure. So to re-establish this genus I applied to the Director of the Zoological Survey of India for a loan of Nevill's type. This he most generously placed at my disposal, and the opportunity is now taken to re-describe and to re-figure it. Thus:—

PSEUDORHAPHITOMA FAIRBANKI *Nevill.*

(Plate li., figs. 127, 128, 129.)

Shell narrowly conical, solid. Colour uniform cinnamon-drab, except the first two whorls which are hyaline white. Whorls eight, gradually increasing. Sculpture:—The second whorl has a nepionic sculpture of numerous fine radial riblets; the remainder of the shell is traversed by six prominent stout spaced radial ribs, which ascend the spire vertically and without interruption. These are crossed by fine and coarse spirals; the major spirals are ten on the last whorl, four on the penultimate, and three on the previous whorls; they form polished beads on the crests of the ribs; between each major spiral run six to eight microscopically-beaded threads. Behind the aperture the suture first ascends slightly, then descends abruptly. The final rib, more massive than its fellows, forms a varix in which is excavated a semicircular sinus, and from which an inbent lip contracts the mouth. Within the outer lip are four denticules, and on the inner lip is a raised callus pad. Canal short and broad. Length 6·2 mm., breadth 2·3 mm.

*Hab.* India:—Bombay.

PSEUDORHAPHITOMA ALTICOSTATA *Sowerby.*

(Plate li., fig. 130.)

*Mangilia alticostata* Sowerby, Proc. Malac. Soc., ii., 1896, p. 31, pl. iii., fig. 16. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 17. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 313. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 167.

*Hab.* South Australia:—12 to 15 fathoms, St. Vincents Gulf (type); 40 fathoms, Neptune Island (the shell here figured); 44 fathoms, Cape

[82] Cossmann—Rev. Crit. Pal., iii., 1889, p. 1, new name for *Ditoma* Bellardi, type *Mangilia angusta* Jan.

[83] Dall—Proc. U.S. Nat. Mus., lvi., 1920, p. 79.

Borda; 40 to 150 fathoms, Beachport; 24 fathoms, Newland Head; 15 to 20 fathoms, St. Francis Island; Wallaroo and Port Adelaide (Verco). N.S.Wales:—Middle Harbour, Port Jackson (self).

PSEUDORHAPHITOMA AXICULA *sp. nov.*

(Plate li., fig. 131.)

*Mangelia hexagonalis* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 162 (not *Pleurotoma hexagonalis* Reeve, Conch. Icon., i., 1845, pl. xxxii., fig. 293).

Shell solid, subcylindrical, base rounded, sides flat, and summit delicately tapered. Colour pale buff, uniform but for a tinge of lilac on the columella. Whorls, including the protoconch, nine. Protoconch with the initial whorl tilted, the first and second smooth and helicoid. Suture linear. Sculpture:—A clathrate sculpture is developed on the third whorl, the next is bicarinate; later the keels diminish and vanish; the ribs are six to a whorl, elevated, stout, and distant, descending the spire perpendicularly and continuously; at the anterior extremity the ribs run across the snout; the spirals are even closely-packed threads, numbering about seventeen on the penultimate, and about forty on the last whorl. Aperture:—Mouth very narrow, without denticules on either side; the varix is of the calibre of the preceding ribs; its insertion does not rise above the plane of the suture, and it fills the interval between two ribs of the preceding whorl; sinus small and shallow; columella perpendicular; canal short and broad. Length 8 mm., breadth 2 mm.

From its associates in the genus this species differs as follows:—From *P. alticostata*, which is nearest, by less elevated ribs and coarser spirals and narrower form; from *P. pyramis* Hinds, by narrower form; from *P. agna* Melvill and Standen, by larger size, straighter ribs, more slender form, and coarser spirals; and from *P. multigranosa* Schepman, by more even sculpture, smaller size, and narrower form.

*Hab.* Queensland:—8 to 12 fathoms, Torres Strait (type, Brazier); 4 to 14 fathoms, Albany Passage (self).

PSEUDORHAPHITOMA BIPYRAMIDATA *sp. nov.*

(Plate li., fig. 132.)

Shell small, rather solid, lanceolate. Colour uniform white. Whorls eight, including the protoconch. The latter has two and a half whorls, the first two being smooth and helicoid; the next half whorl carries about ten sharp, narrow, arcuate, radiate riblets, quite discordant with the succeeding sculpture. The adult whorl begins abruptly with seven prominent ribs, which descend the whorls vertically and continuously; these are traversed by spaced spiral cords which commence with two on the third whorl and end with seventeen on the last. Between these cords run from two to six rows of densely packed microscopic grains. Aperture sublinear; the thick and outstanding varix extends a broad lip over the mouth; sinus semicircular, cut out of the varix, with a substantial tubercle on the right

and another on the left; there are no other teeth within either lip; on the columella is a thick and smooth sheet of callus. Length 5 mm., breadth 2 mm.

There is a species from the Persian Gulf which, though rather larger, seems to be otherwise identical, and which has been distributed as *Mangilia fairbanki* and as *Mangilia scitula*, neither of which names are applicable. I have also seen *P. bipyramidata*, from the Isle of Pines, New Caledonia. Along the Great Barrier Reef this species seems common and generally distributed.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (type); 4 to 14 fathoms, Albany Passage; 5 to 10 fathoms, Hope Island; 15 fathoms, Palm Island; 4 fathoms, Van Diemens Inlet, Gulf of Carpentaria (self); 20 fathoms, off Endeavour Reef (McCulloch).

### Pseudorhaphitoma calcata *Hedley.*

*Mangilia calcata* Hedley, Proc. Linn. Soc. N.S.W., xxxiv., 1909, p. 456, pl. xliv., fig. 90.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island (type); 5 to 8 fathoms, Murray Island (self).

### Pseudorhaphitoma crudelis *sp. nov.*

(Plate li., fig. 133.)

Shell small, rather solid, lanceolate, constricted at the suture, and contracted at the base. Colour uniform pale buff. Whorls eight, of which three constitute the protoconch. Sculpture:—The ribs are seven to a whorl, slightly oblique to the axis, low and round-backed, decreasing in prominence as growth proceeds, continuing from whorl to whorl; the spirals are numerous, closely-packed, grained, unequal threads extending from the suture to the base; on the upper whorl two spirals predominate to form a double keel, but these gradually decrease, so that when the last whorl is reached the discrepancy between major and minor spirals has nearly disappeared. Aperture:—Mouth narrow, the varix equal to the preceding ribs, and not rising above the plane of the suture; its outer limb evenly striated; within the aperture a tubercle arises beneath the sinus; below that and under the free edge of the limb are four minute denticules; columella perpendicular; sinus small and shallow; canal short and open. Length 5·5 mm., breadth 2 mm.

This is like a miniature *Mangelia multigranosa* Schepman.

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (type, self). The "Chevert" also collected this at Katow, Papua.

PSEUDORHAPHITOMA DARNLEYI *Brazier.*

(Plate li., fig. 134.)

*Clathurella darnleyi* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 154.

*Mangelia darnleyensis* Tryon, Man. Conch., vi., 1884, p. 256, pl. i., fig. 73.

One of the original Darnley Island specimens is here figured. The species has the usual contour of *Pseudorhaphitoma*, but differs by the absence of fine grained spirals. This, with *P. ditylota*, *fortilirata*, and *styracina*, are aberrant members of this genus whose classification requires further attention.

*Hab.* Queensland:—20 fathoms, off Darnley Island (type, Brazier); Murray Island (self).

PSEUDORHAPHITOMA DITYLOTA *Melvill.*

*Clathurella ditylota* Melvill, Proc. Malac. Soc., x., 1912, p. 252, pl. xii., fig. 17.

*Lienardia ditylota* Melvill, *op. cit.*, xii., 1917, p. 183.

*Hab.* Queensland:—Townsville (Henn).

PSEUDORHAPHITOMA INFORMIS *sp. nov.*

(Plate li., fig. 135.)

Shell small, rather solid, ovate-elongate, broader and shorter than usual. Colour uniform pale buff externally, stained with orange inside the aperture. Whorls six. Sculpture:—The ribs are six to a whorl, continuous, rather low, round-backed, and perpendicular; the spirals are fine, even, and close threads, which become coarser and more widely spaced on the snout. Aperture:—Mouth rather wide; varix the same calibre as the ribs; sinus small and shallow; within the outer lip are four small denticules, the uppermost largest; canal short, broad, and re-curved. Length 5 mm., breadth 2 mm.

*Hab.* N.S.Wales:—Broughton Island, Port Stephens (Museum Exped.) Queensland:—17 to 20 fathoms, Mast Head Island (self).

PSEUDORHAPHITOMA PYRAMIS *Hinds.*

*Clavatula pyramis* Hinds, Proc. Zool. Soc., 1843, p. 42, and Zool. "Sulphur," ii., 1844, p. 20, pl. vi., fig. 19.

*Mangelia obeliscus* Reeve, Proc. Zool. Soc., 1846, p. 110, and Conch. Icon., iii., 1846, pl. vii., fig. 56.

*Clathurella (Pseudorhaphitoma) obeliscus* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 56 (not *Pleurotoma obeliscus* Des Moulins, Linn. Soc. Bordeaux, 1842, p. 70).

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (self).

PSEUDORHAPHITOMA STYRACINA *sp. nov.*

(Plate lii., fig. 136.)

Shell solid, subulate. Whorls ten. Colour uniform grey. Sculpture:—Ribs low and broad, with narrow interstices, six on the last whorl; spirals are sharp threads running evenly over both ribs and furrows, and increasing by intercalation; on the penultimate are four spirals, and on the last whorl fourteen, some of which are alternately large and small. Aperture:—Sinus U-shaped, rather wide and deep; columella simple; outer lip a thin bent edge; throat grooved within. Length 10 mm., breadth 3 mm.

This has a general likeness to *Pleurotoma fortilirata* Smith,[84] but has the base less excavate, the spirals more numerous, and the radials fewer and bolder.

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (type); off Horsey River (self); 10 fathoms, Cape Sidmouth (Henn). There are unrecorded specimens of this in the "Chevert" collection from off Cape York and Katow.

PSEUDORHAPHITOMA TRANSITANS *sp. nov.*

(Plate lii., fig. 137.)

Shell small, solid, biconical. Colour uniform pale buff. Whorls seven. Protoconch of two small smooth helicoid whorls. Sculpture:—First adult whorl with numerous small radial riblets; on subsequent whorls the ribs are spaced seven to a whorl; they are continuous, perpendicular, and elevated; the spirals are prominent cords which project at the intersection of the ribs, two on the upper whorls and twelve on the last one, evenly distributed from the shoulder to the anterior extremity. Aperture:—Mouth narrow; varix broad and high, of the same calibre as the ribs; sinus small and shallow; within the aperture is a small denticule at each side of the sinus, and a small deeply-seated fold on the columella; canal short and wide. Length 4 mm., breadth 1·5 mm.

In general appearance, by short stature and conspicuous spirals, this form recedes from typical *Pseudorhaphitoma* towards *Heterocithara*.

*Hab.* Queensland:—15 fathoms, Palm Islands (self).

GURALEUS *Hedley.*

*Guraleus* Hedley, Journ. Roy. Soc. N.S.W., li., 1918, suppl. p. M. 79, type *Mangelia picta* Adams and Angas.

Shell fusiform or subcylindrical, thin. Colour ranging from uniform buff, with or without chocolate spiral lines or bands, to entire chocolate. Nucleus of two or three smooth helicoid whorls. Fasciole not interrupting the sculpture, and scarcely indicated by the curvature of growth lines.

[84] Smith—Proc. Zool. Soc., 1879, p. 194, pl. xix., fig. 22.

Sculpture:—The radials vary from bold spaced ribs projecting at the shoulder to fine close riblets; the entire shell, except the nucleus, is overrun with fine, close, beaded or unbeaded threads. Aperture about half the length of the shell, with or without armature; outer lip slightly inflected; sinus subsutural, deeply rounded; canal short and open.

*Guraleus* is perhaps a development in temperate seas of a tropical citharoid stock in which less favourable growth conditions have effected structural economies, by reduction of the varix, the teeth within the aperture, granular microscopic sculpture, and a looser winding of the whorls. *Mangilia glabra* Harris and *M. obsoleta* Harris, from the miocene of Victoria, appears to be *Guraleus*. *Mangilia sinclairi* Smith represents this genus in New Zealand. South Africa has at least one representative of *Guraleus* in *Clathurella amplexa* Gould.[85]

A division of *Guraleus* may be separated from the rest by rounded shoulder, ovate contour, shorter spire, and smoother sculpture. It includes *bellus*, *comptus*, *costatus*, *fallaciosus*, *flaccidus*, *insculptus*, *inornatus*, *kingensis*, *mitralis*, *nitidus*, *permutatus*, and *schoutenensis*. This may be distinguished as a subgenus Marita, with *Cythara compta* Adams and Angas for type.

GURALEUS BELLUS *Adams* and *Angas*.

*Cithara bella* Adams and Angas, Proc. Zool. Soc., 1863 (1864), p. 419, pl. xxxvii., fig. 6. *Id.* Angas, Proc. Zool. Soc., 1865, p. 160.

*Mangelia boakei* Tryon, Man. Conch., vi., 1884, p. 270, pl. xxv., fig. 36.

*Mangilia adcocki* Sowerby, Proc. Malac. Soc.. ii., 1896, p. 29, pl. iii., fig. 18. *Id.* Pritchard and Gatliff, Proc. Roy. Soc., xii., 1900, p. 174. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 370. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 312.

In the British Museum there is one shell marked as the type of *G. bella*. Sowerby changed the name of this species on the ground that *Mangilia bella* was preoccupied by Hinds, but as a matter of fact *Mangilia* was used for this species neither by Hinds nor by Adams and Angas, so that the innovation was not necessary. Tryon erred in ascribing this species to Ceylon.

*Hab.* South Australia:—Rapid Bay (type, Angas); 14 to 22 fathoms, Investigator Strait (Verco). Victoria:—Port Phillip, Western Port, and Puebla (Gatliff). Tasmania:—North Coast (May).

GURALEUS BRAZIERI *Angas*.

(Plate lii., fig. 138.)

*Clathurella brazieri* Angas, Proc. Zool. Soc., 1871, pp. 18, 93, pl. i., fig. 21. *Id.* Tryon, Man. Conch., vi., 1884, p. 295, pl. xvii., fig. 98 (not

[85] Bartsch—U.S. Nat. Museum, Bull. 91, 1915, p. 30, pl. ii., fig. 10.

*Daphnella brazieri* Hedley, Mem. Austr. Mus., iv., 1903, p. 392, text fig. 107).

In the British Museum is one marked type and included in *Mangelia*.

*Hab.* N.S.Wales :—Sow and Pigs Reef, Port Jackson (type, Brazier); 5 fathoms, Wreck Bay (self). Victoria :—Port Albert (Gabriel).

GURALEUS COMPTUS *Adams* and *Angas*.

(Plate liii., fig. 139.)

*Cithara compta* Adams and Angas, Proc. Zool. Soc., 1863 (1864), p. 419, pl. xxxvii., fig. 5. *Id.* Angas, Proc. Zool. Soc., 1865, p. 160, 1867, p. 204. *Id.* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 18. *Id.* Sowerby, Proc. Malac. Soc., ii., 1896, p. 31. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 176. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 370. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 327. *Id.* Hedley, Proc. Roy. Soc. W.A., i., 1916, p. 206.

*Daphnella varix* Tenison-Woods, Proc. Roy. Soc. Tasm., 1876 (1877), p. 138, and 1877 (1878), p. 27. *Id.* Hardy, Proc. Roy. Soc. Tasm., 1915, p. 73.

*? Clathurella peregrina* Gould, Proc. Bost. Soc. Nat. Hist., vii., Oct. 1860, p. 337. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxxviii., 1913, p. 311.

In the British Museum four specimens are marked as types of this species.

*Hab.* N.S.Wales :—Port Jackson (type of *compta*, Angas); Catherine Hill Bay (Cherry). Victoria :—King Island (Tate); Flinders; San Remo; Sorrento (Gatliff). Tasmania :—Tamar Heads (type of *D. varix*, Tenison-Woods). South Australia :—Rapid Bay (Angas); St. Francis Island; 9 to 20 fathoms, St. Vincent and Spencer Gulfs (Verco). Western Australia :—Rottnest Island (Verco); Cottesloe (Henn).

GURALEUS COSTATUS *sp. nov.*

(Plate lii., fig. 140.)

Shell small, thin, elongate-ovate. Colour pale cream, with one or two faint and narrow buff zones. Whorls six, of which two form the protoconch; upper whorls glossy. Sculpture :—The radials are narrow, sharp, elevated riblets, becoming closer and smaller as growth proceeds, and vanishing on the base; the first adult whorl has sixteen riblets, which increase to about twenty-seven on the last whorl; the base has about ten incised spiral lines. Aperture :—The mouth is wide, lip thin, not inflected, with a wide and shallow sinus. Length 10 mm., breadth 3 mm.

*Hab.* N. S. Wales :—80 fathoms, 22 miles east of Narrabeen (type, self).

Var. WILESIANUS, *var. nov.*

More slender in contour, and developing spiral striæ on the intercostal spaces of the upper whorls.

*Hab.* South Australia:—100 fathoms, 40 miles south of Cape Wiles (self).

GURALEUS CUSPIS *Sowerby.*

*Mangilia cuspis* Sowerby, Proc. Malac. Soc., ii., 1896, p. 31, pl. iii., fig. 17.

*Clathurella letourneuxiana* var. *cuspis* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 309.

*Hab.* South Australia:—St. Vincent Gulf (type, Verco). Victoria:—Dromana (Gabriel).

CUSPIS var. CONNECTENS *Sowerby.*

*Mangelia connectens* Sowerby, Proc. Malac. Soc., ii., 1896, p. 30, pl. iii., fig. 14. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 316.

*Hab.* South Australia:—20 fathoms, St. Vincent Gulf (type); 55 fathoms, Cape Borda; 15 fathoms, St. Francis Island (Verco). Tasmania:—Derwent Estuary (May).

GURALEUS FASCINUS *sp. nov.*

(Plate lii., fig. 141.)

Shell elongate-fusiform; the last whorl about half of total length; whorls angled at the shoulder. Colour:—The type is cream-buff monochrome; another specimen is brown-buff, with a pale band on the base, and another on the anterior extremity, and with every fourth spiral paler than the rest; another specimen is white, with an orange-brown zone on the base. Whorls eight, including a three-whorled protoconch; sutures linear. Sculpture:—Conspicuous ribs descend continuously from whorl to whorl at the rate of twelve to the penultimate; on the last whorl the ribs become gradually smaller, and vanish on the base; the whole surface is over-run by minute, closely-packed, even, sharp spiral threads. Aperture:—Mouth rather wide; outer lip with a low varix and a thin expanded free edge, which is insinuate at the base; canal short; sinus wide and shallow. Length 9 mm., breadth 4 mm.

*Hab.* N. S. Wales:—Port Jackson (type, self); 18 fathoms, between Balls Head and Goat Island, Port Jackson (Brazier).

GURALEUS FASCINUS var. STEPHENENSIS *var. nov.*

(Plate lii., fig. 142.)

Larger than the type, with fewer radials, and orange on the base.

*Hab.* N.S.Wales:—Port Stephens (Brazier).

GURALEUS FALLACIOSUS *Sowerby*.

*Daphnella fallaciosa* Sowerby, Proc. Malac. Soc., ii., 1896, p. 26, pl. iii., fig. 7.

*Mangilia fallaciosa* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 319. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxiii., 1910, p. 90. *Id.* May, Proc. Roy. Soc. Tasm., 1910 (1911), p. 308.

*Hab.* South Australia:—St. Vincent Gulf (type); 150 fathoms, Beachport; 300 fathoms, Cape Jaffa; 20 fathoms, St. Francis Island (Verco). Victoria:—Wilson's Promontory ("Endeavour"). Tasmania:—100 fathoms, Cape Pillar (May).

GURALEUS FLACCIDUS *Pritchard* and *Gatliff*.

(Plate lii., fig. 143.)

*Mangilia flaccida* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1899, p. 102, pl. viii., figs. 3, 4. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1900, p. 370. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 315.

*Hab.* Victoria:—Western Port (type, Pritchard and Gatliff). Tasmania (May). South Australia:—St. Francis Island; 55 fathoms, Cape Borda; St. Vincent Gulf (Verco).

GURALEUS FLAVESCENS *Angas*.

(Plate lii., fig. 144.)

*Mangilia flavescens* Angas, Proc. Zool. Soc., 1877, p. 37, pl. v., fig. 11.

In the British Museum are two marked as types of this species.

*Hab.* N. S. Wales:—Port Jackson (type, Brazier); Port Stephens (Museum Expedition).

GURALEUS GRANULOSISSIMUS *Tenison-Woods*.

*Clathurella granulosissima* Tenison-Woods, Proc. Roy. Soc. Tasm., 1878 (1879), p. 37. *Id.* Tryon, Man. Conch., vi., 1884, p. 282, pl. xxxii., fig. 20. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 370, pl. xxiv., fig. 34. *Id.* Hardy, Proc. Roy. Soc. Tasm., 1915, p. 66.

*Mangelia granulosissima* Hedley, Mem. Austr. Mus., iv., 1903, p. 393. *Id.* Gatliff, Proc. Roy. Soc. Vict., xx., 1907, p. 32.

In this species, as in *tenuiliratus* and *morologus*, grains are strung on spirals, but here the grains are of much larger size. Sometimes the radials tend to disappear.

*Hab.* Tasmania:—North Tasmania (type, Atkinson); D'Entrecasteaux Channel (May). Victoria:—6 to 8 fathoms, Western Port (Gatliff). N. S. Wales:—22 fathoms, off Manning River; 63 to 75 fathoms, Port Kembla ("Thetis").

GURALEUS INCRUSTUS *Tenison-Woods.*

*Drillia incrusta* Tenison-Woods, Proc. Roy. Soc. Tasm., 1876 (1877), p. 136.

*Clathurella incrusta* Tryon, Man. Conch., vi., 1884, p. 286, pl. xxxiv., fig. 99.

*Mangelia st. gallæ* and var. *benedicti* Tenison-Woods, Proc. Roy. Soc. Tasm., 1876 (1877), p. 137. *Id.* Hardy, *op. cit.*, 1915, p. 69. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 369, pl. xxiv., fig. 33. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xviii., 1906, p. 50.

*Clathurella st. gallæ* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 310.

Mr. W. L. May wrote to me (9th June, 1916) that the two type specimens of *D. incrusta* in the Tasmanian Museum are poorly preserved, but seem to him identical with the type of *st. gallæ*, which is a good specimen, and in the same collection.

The identity of var. *benedicti* seems to be lost; it was probably a distinct species.

*P. incrusta* closely resembles *P. tenuilirata*, but *incrusta* has more numerous less prominent radials, but fewer major spirals. *P. tenuilirata* is the broader in proportion to length, and has the minute spirals more distinctly grained.

*Hab.* Tasmania:—Blackman's Bay (type of *incrusta*, Petterd); Long Bay (type of *st. gallæ*, Atkinson). Victoria:—Western Port (Pritchard and Gatliff). South Australia:—40 to 150 fathoms, Beachport; 130 fathoms, Cape Jaffa (Verco).

GURALEUS INORNATUS *Sowerby.*

*Mangelia inornata* Sowerby, Proc. Malac. Soc., ii., 1896, p. 30, pl. iii., fig. 15.

*Daphnella inornata* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 321.

*Hab.* South Australia:—15 to 20 fathoms, St. Vincent Gulf (type); 22 fathoms, Backstairs Passage; 62 fathoms, Cape Borda; 90 fathoms, Cape Jaffa; 110 fathoms, Beachport (Verco).

GURALEUS INSCULPTUS *Adams* and *Angas.*

*Mangelia insculpta* Adams and Angas, Proc. Zool. Soc., 1863 (1864), p. 420, pl. xxxvii., fig. 8. *Id.* Angas, Proc. Zool. Soc., 1865, p. 160. *Id.* Sowerby, Proc. Malac. Soc., ii., 1896, p. 30. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 315. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxiii., 1910, p. 90.

*Clathurella insculpta* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 57. *Id.* Hidalgo, Revist. Acad. Cienc. Madrid, i., 1904, p. 341.

In the British Museum there is one marked type. Probably Dr. Boettger was wrong in identifying this species from Manilla.

*Hab.* South Australia:—St. Vincent Gulf (type, Angas); Investigator Strait; 12 fathoms, Cape Borda; Sceale Bay; St. Francis Island (Verco). Victoria:—Port Albert (Worcester).

Var. DELICATULUS *Tenison-Woods.*

*Mangelia delicatula* Tenison-Woods, Proc. Roy. Soc. Tasm., 1878 (1879), p. 37. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 369, pl. xxiv., fig. 35. *Id.* Gatliff, Proc. Roy. Soc. Vict., xx., 1907, p. 31. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 316. *Id.* Hardy, Proc. Roy. Soc. Tasm., 1915, p. 65.

*Daphnella delicatula* Tryon, Man. Conch., vi., 1884, p. 302, pl. xxxii., fig. 29.

*Hab.* Tasmania:—Long Bay (type, Tenison-Woods); D'Entrecasteaux Channel (May). Victoria:—8 fathoms, Western Port (Gatliff). South Australia:—Aldinga; St. Francis Island (Verco).

GURALEUS KINGENSIS *Petterd.*

*Daphnella kingensis* Petterd, Journ. of Conch., ii., 1879, p. 102. *Id.* Hedley and May, Rec. Austr. Mus., vii., 1908, p. 112.

*Cythara kingensis* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 370. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xviii., 1906, p. 50. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 327.

*Cithara cognata* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1899, p. 103, pl. viii., fig. 5.

*Hab.* Tasmania:—King Island (type of *kingensis*, Petterd); Frederick Henry Bay (May). Victoria:—Western Port (type of *cognata*, Gabriel). South Australia:—15 to 20 fathoms, St. Francis Island; 40 to 110 fathoms, Beachport; 90 to 300 fathoms, Cape Jaffa (Verco).

Var. EMINA *Hedley.*

(Figure 8.)

*Mangelia emina* Hedley, Rec. Austr. Mus, vi., 1905, p. 53, fig. 20.

In this variety the shell is more fusiform, the ribs more prominent and numerous, and the spirals wider spaced.

*Hab.* N. S. Wales:—100 fathoms, east of Cape Byron (type, Halligan); 63 to 75 fathoms, Port Kembla ("Thetis").

Fig. 8.

GURALEUS LALLEMANTIANUS *Crosse* and *Fischer*

*Pleurotoma (Mangelia) lallemantiana* Crosse and Fischer, Journ. de Conch., xiii., 1865, p. 423, pl. xi., fig. 5.

*Clathurella lallemantiana* Angas, Proc. Zool. Soc., 1865, p. 160. *Id.* Sowerby, Proc. Malac. Soc., ii., 1896, p. 28. *Id.* Pritchard and

Gatliff, Proc. Roy Soc. Vict., xii., 1900, p. 177. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 371. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 309.

*Mangelia lallemantiana* Angas, Proc. Zool. Soc., 1877, p. 185.

Angas seems to have erred in citing this from Port Jackson. The type of *G. lallemantiana*, so marked, is in the British Museum.

*Hab.* South Australia:—Rapid Bay (type, Angas). Tasmania:—Bass Straits (May). Victoria:—Port Phillip; Western Port (Pritchard and Gatliff).

GURALEUS LETOURNEUXIANUS *Crosse* and *Fischer*.

(Plate lii., fig. 145.)

*Pleurotoma (Clathurella) letourneuxiana* Crosse and Fischer, Journ. de Conch., xiii., 1865, p. 425, pl. xi., fig. 7.

*Mangelia letourneuxiana* Angas, Proc. Zool. Soc., 1867, p. 204. *Id.* Tenison-Woods, Proc. Roy. Soc. Tasm., 1876 (1877), p. 28. *Id.* Sowerby, Proc. Malac. Soc., ii., 1896, p. 32.

*Daphnella letourneuxiana* Hutton, Cat. Mar. Moll. N.Z., 1873, p. 12, and 1880, p. 218.

*Clathurella letourneuxiana* Tryon, Man. Conch., vi., 1884, p. 286, pl. xvii., fig. 87. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 177. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 177. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 309.

As the original illustration is unsatisfactory, another figure is here offered. The species has been reported, apparently on insufficient evidence, from New Zealand and from South Australia.

*Hab.* N. S. Wales:—Port Jackson (type, Angas); Port Stephens (Brazier). Tasmania:—Frederick Henry Bay (May). Victoria:—Port Phillip; Western Port (Pritchard and Gatliff).

GURALEUS MITRALIS *Adams* and *Angas*.

*Bela mitralis* Adams and Angas, Proc. Zool. Soc., 1863 (1864), p. 420. *Id.* Angas, Proc. Zool. Soc., 1867, p. 202. *Id.* Tenison-Woods, Proc. Roy. Soc. Tasm., 1877, p. 27.

*Daphnella mitralis* Brazier, Journ. of Conch., vi., 1889, p. 71.

*Mangilia mitralis* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 173. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 311. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxxviii., 1913, p. 310, pl. xix., fig. 75.

*G. mitralis* can be distinguished from its variety *australis* by longer and more slender form, by finer sculpture, by a subsutural band of raw sienna, and by the geographical distribution.

*Hab.* N. S. Wales:—Port Jackson (type, Angas); Port Stephens; Middle Harbour (Brazier); Dudley; Twofold Bay (self). Victoria:—(Pritchard and Gatliff).

Var. AUSTRALIS *Adams* and *Angas.*

*Bela australis* Adams and Angas, Proc. Zool. Soc., 1863 (1864), p. 420. *Id.* Angas, Proc. Zool. Soc., 1865, p. 159.

*Mangilia australis* Sowerby, Proc. Malac. Soc., ii., 1896, p. 31. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 370. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxxviii., 1913, p. 310, pl. xix., fig. 76. *Id.* Hedley, Journ. Roy. Soc., W.A., i., 1916, p. 207.

The type of *australis*, figured as above, is in the British Museum.

*Hab.* South Australia:—Aldinga Bay (type of *australis*); Rapid Bay (Angas); Kangaroo Island; Venus Bay; St. Francis Island (Verco). Tasmania:—King Island (Tate). Western Australia:—Cottesloe (Henn).

GURALEUS MOROLOGUS *sp. nov.*

(Plate lii., fig. 146.)

*Daphnella brazieri* Hedley, Mem. Austr. Mus., iv., 1903, p. 392, fig. 107 (not *Clathurella brazieri* Angas).

Shell thin, slender-fusiform, sub-turreted, upper whorls with a sloping shoulder meeting a perpendicular periphery at an acute angle. The radials are prominent spaced ribs, nine to twelve on the last whorl, finally evanescent, acutely prominent on the shoulder, and diminishing in a backward curve to the suture. The spirals are of two grades; first spaced cords that over-ride the ribs and lattice their interstices; these vary in size and number, about twenty may occupy the last whorl; between these cords are packed from three to ten minute threads; these small spirals cover the whole surface of the shell, and resolve under the lens into strings of small and close grains. Aperture:—Mouth narrow; columella straight; lip simple, sharp, and produced; sinus broad and shallow. Length 8 mm., breadth 3 mm.

At first acquaintance I mistook this for *G. brazieri*, which is more cylindrical, and has more and slighter radials. Superficially it resembles *G. connectens*, but microscopically the fine spirals of *morologus* are seen to carry grains not apparent in *connectens*. The protoconch of *morologus* is also more bulbous than that of *connectens*.

*Hab.* N. S. Wales:—50 to 52 fathoms, off Botany Heads (type); 22 fathoms, off Manning River; 41 to 50 fathoms, Cape Three Points; 63 to 75 fathoms, Port Kembla ("Thetis" Expedition). Victoria:—Western Port (Gabriel).

GURALEUS NITIDUS *sp. nov.*

(Plate lii., fig. 147.)

Shell small, thin, translucent, glossy, narrow-ovate. Colour white, with a few faint rusty spots. Whorls five and a half, two of which compose the protoconch. Sculpture:—Radials are elevate narrow spaced ribs—on the first adult whorl eleven, on the last whorl eight; between these ribs are incised spiral lines, increasing from six on the first adult whorl to about twenty-four on the last. Aperture:—Mouth narrow; varix slight; sinus indefinite. Length 7·5 mm., breadth 3 mm.

*Hab.* South Australia:—100 fathoms, 40 miles south of Cape Wiles (type, self).

GURALEUS PERMUTATUS *sp. nov.*

(Plate liii., fig. 148.)

Shell small, ovate-cylindrical, rather gibbous. Colour white on the protoconch, and pale cream on the remainder of the shell. Whorls five, of which two compose a rather elevate protoconch. Sculpture:—On the first adult whorl are ten narrow, elevated, wide-spaced radials; these degenerate as growth advances; from the last suture they persist as downward dashes, and vanish on the anterior half of the shell; the entire surface carries dense microscopic spiral scratches. Aperture:—The mouth is narrow and vertical; the varix is prominent and expanded; near the summit is excavated a broad and shallow sinus, and at two-thirds of its length occurs a stromboid insinuation; a thin free edge reaches over the mouth; on the columella is a substantial callus; canal short, wide, and open. Length 5·7 mm., breadth 2·5 mm.

*Hab.* N. S. Wales:—63 to 75 fathoms, off Port Kembla (type, "Thetis"); 100 fathoms, Wollongong (self).

GURALEUS PICTUS *Adams* and *Angas.*

(Plate liii., fig. 150.)

*Mangelia picta* Adams and Angas, Proc. Zool. Soc., 1863 (1864), p. 419, pl. xxxvii., fig. 7. *Id.* Angas, *op. cit.*, 1867, p. 204. *Id.* Sowerby, Proc. Malac. Soc., ii., 1896, p. 29. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 173. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 370. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 315.

*Mangelia meredithiæ* Tenison-Woods, Proc. Roy. Soc. Tasm., 1875 (1876), p. 142. *Id.* May, Proc. Roy. Soc. Tasm., 1902, p. 110. *Id.* Hardy, *op. cit.*, 1915, p. 68.

*Hab.* N.S.Wales:—Port Jackson (type of *pictus*, Angas); Dudley; Gerringong (Hedley). Queensland:—Caloundra (Kesteven and Johnston); Bustard Head (Pulleine); Lady Elliot Island (Miss Lovell). Victoria (Pritchard and Gatliff). Tasmania:—Bass Straits (type of *meredithiæ*, Tenison-Woods); King Island (Tate). South Australia:—8 to 200 fathoms, St. Vincent Gulf to Fowler's Bay (Verco). Western Australia:—Geographe Bay (Cox).

Var. VINCENTINUS *Crosse* and *Fischer*.

(Plate liii., fig. 149.)

*Pleurotoma (Mangelia) vincentina* Crosse and Fischer, Journ. de Conch., xiii., 1865, p. 422, pl. xi., fig. 6.

*Mangelia vincentina* Angas, Proc. Zool. Soc., 1865, p. 160, and 1877, p. 185. *Id.* Sowerby, Proc. Malac. Soc., ii., 1896, p. 30. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 174. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 369. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 316.

*Daphnella vincentina* Tryon, Man. Conch., vi., 1884, p. 311, pl. xvi., fig. 91. *Id.* Cooke, Ann. Mag. Nat. Hist. (5), xvi., 1885, p. 35.

*Mangilia alucinans* Sowerby, Proc. Malac. Soc., ii., 1896, p. 29, pl. iii., fig. 12, and var. *ornata*, pl. iii., fig. 13. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 175. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 369.

*Mangilia lineata* Angas (not Reeve), Proc. Zool. Soc., 1865, p. 160.

*Clathurella browniana* (Tenison-Woods) Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 445.

*Hab.* South Australia:—Rapid Bay (type of *vincentiana*, Angas); Yankalilla Bay (type of *alucinans*); St. Francis Island; 110 fathoms, Beachport (Verco). Victoria:—Port Phillip; Western Port; Portland (Pritchard and Gatliff). Tasmania:—Long Bay (May); King Island (Tate). N. S. Wales:—Cabbage Tree Bay; 20 fathoms, Port Jackson Heads (Brazier); Twofold Bay (self). Western Australia:—King Georges Sound (Dakin).

It is improbable that Cooke was correct in identifying this from the Gulf of Suez.

This is one of the most wide-spread and variable of Australian marine temperate gasteropods. Typically *G. pictus* is an elongate round-shouldered shell, 11·5 mm. long and 3·5 mm. broad. Colour white, with a broad band, liable to splitting and paler at the edges, of sienna brown, which extends from the angle down to the suture; also a narrow spiral brown thread above the angle. The ribs are eight to a whorl, distant, oblique, continuous above, and gradually fading out on the base of the last whorl. To the unaided eye the surface is smooth and glossy, but under the microscope appear narrow, sharply incised, spiral grooves, faint above, and gradually becoming more distinct on the base; of these there are thirty on the last whorl.

More common is the form called *meredithiæ* by Tenison-Woods. This is comparatively broader, more acutely angled at the shoulder, 9·5 mm. long, and 4 mm. broad. Colour pale cream, with brown dashes in the intercostal spaces on the shoulder. The ribs are more prominent, and vary from nine to twelve on a whorl. The spiral striæ multiply by intercalation to about sixty on the last whorl. A colour variety, with several narrow spiral brown bands, has been figured by Sowerby as *ornata*.

The variety *vincentina* is a small, compact, and monochrome brown form of the Adelaidean region, the relations, variability, and range of which have been excellently discussed by Sir Joseph Verco.

In the British Museum are two marked as types of *M. picta*, and one (perforated in the penultimate whorl) marked as type of *vincentina*. Mr. Hardy recorded that the type of *meredithiæ* is still preserved in the Tasmanian Museum, Hobart.

### Guraleus schoutenensis *May*.

*Mangilia schoutenensis* May, Proc. Roy. Soc. Tasm., 1901, p. 393, pl. xv., fig. 19.

*Hab.* Tasmania:— 40 fathoms, 3 miles east of Schouten Island (type, May). Victoria:—80 fathoms, off Gabo Island ("Endeavour"). N. S. Wales:—63 to 75 fathoms, Port Kembla; 22 to 39 fathoms, Port Hacking ("Thetis"); off Cabbage Tree Island; Port Stephens (Museum Expedition).

### Guraleus tasmanicus *Tenison-Woods*.

(Plate liii., fig. 151.)

*Cithara tasmanica* Tenison-Woods, Proc. Roy. Soc. Tasm., 1875 (1876), p. 145. *Id.* Hardy, *op. cit.*, 1915, p. 70. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxvi., 1902, p. 700.

*Mangilia tasmanica* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 175. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 311.

*Mangelia jacksonensis* Angas, Proc. Zool. Soc., 1877, p. 37, pl. v., fig. 10.

*Daphnella jacksonensis* Brazier, Journ. of Conch., vi., 1889, p. 71.

*Mangilia alternata* Tenison-Woods, Proc. Roy. Soc. Tasm., 1878 (1879), p. 39. *Id.* Hardy, *op. cit.*, 1915, p. 62. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 173. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 369, text fig. 4.

*Cythara maccoyi* Petterd, Journ. of Conch., ii., 1879, p. 103.

The type of *tasmanica* is in the Tasmanian Museum, and that of *jacksonensis* is in the British Museum. Possession of the type of *M. alternata* is claimed by Pritchard and Gatliff for the National Museum, Melbourne; they assign it to *mitralis*. But Hardy records the type of *alternata* as being in the Tasmanian Museum, and accepting this as being more probable, I have followed Tate and May in grouping *alternata* with *tasmanica*. The Port Jackson expression (var. *jacksonensis*) of this species is here figured.

*Hab.* Tasmania:—East Tasmania (type of *tasmanica*, Tenison-Woods); Frederick Henry Bay (May); Circular Head (type of *alternata*, Atkinson); Brown's River (type of *maccoyi*, Petterd). South Australia:—14 to 18 fathoms, St. Vincent Gulf; Spencer's Gulf (Verco). Victoria:—Port Fairy (Whan). N. S. Wales:—25 fathoms, off Port Jackson Heads (? "Challenger"); Middle Harbour (Brazier); Dudley; Ballina (self).

### Guraleus tenuiliratus *Angas.*

(Plate liii., fig. 152.)

*Clathurella tenuilirata* Angas, Proc. Zool. Soc., 1871, p. 17, pl. i., fig. 18. *Id.* Melvill and Standen, Proc. Zool. Soc., 1901, p. 445. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 188.

*Defrancia tenuilirata* Cooke, Ann. Mag. Nat. Hist. (5), xvi., 1885, p. 36.

*Mangelia tenuilirata* Hedley, Mem. Austr. Mus., iv., 1903, p. 392.

This species has a sculpture of minute grained threads. In the British Museum is a single specimen presented by Angas, evidently the type, but not so marked. The references of this species to the Gulf of Oman and to the Gulf of Suez need confirmation.

*Hab.* N. S. Wales:—5 fathoms, Goat Island, Port Jackson (type); Port Stephens (Brazier); 41 to 50 fathoms, Cape Three Points; 63 to 75 fathoms, Port Kembla ("Thetis").

### Macteola *Hedley.*

*Macteola* Hedley, Journ. Roy. Soc. N.S.W., li., 1918, suppl. p. M. 79.

This name is proposed for a genus of the *Mangiliinæ*, in which the aperture has not acquired armature, and in which the lip is not flexed. Prominent radial ribs are over-ridden by fine beaded spiral threads. The apex is mucronate, with smooth whorls. Characteristic is a colour scheme of a peripheral zone of brown or black or orange, sometimes broken into a series of dots or dashes. Type *Purpura (Cronia) anomala* Angas.

Besides the Australian species here enumerated, an extra-limital species, *Mangilia thiasotes* Melvill and Standen, may also be included in *Macteola*.

### Macteola anomala *Angas.*

(Plate liii., figs. 153, 154, 155.)

*Purpura (Cronia) anomala* Angas, Proc. Zool. Soc., 1877, pp. 34, 180, pl. v., fig. 1, and 1880, p. 415.

*Murex anomala* Tryon, Man. Conch., ii., 1880, p. 180, pl. xxxvi., fig. 422, and vi., 1884, p. 318.

*Mangelia anomala* Tate, Proc. Linn. Soc. N.S.W., v., 1880, p. 131. *Id.* Sowerby, Proc. Malac. Soc., ii., 1896, p. 31. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 174. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 369. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 319. *Id.* Hedley, Proc. Roy. Soc. W.A., i., 1916, p. 206.

In fresh specimens a delicate grain sculpture is visible under the lens. The colour varies. There may be only a peripheral row of separate intercostal brown spots, or beneath these there may run a continuous orange zone, anterior to which the shell may be faintly suffused with pink.

*Hab.* N. S. Wales:—25 fathoms, off Port Jackson Heads (Brazier). The species ranges from New South Wales south and west through Victoria, Tasmania, and South Australia to Western Australia. The extreme stations known to me are Port Stephens on the east and Cottesloe on the west.

MACTEOLA INTERRUPTA *Reeve.*

*Mangelia interrupta* Reeve, Conch. Icon., iii., 1846, pl. iii., fig. 16, and Proc. Zool. Soc., 1846, p. 61. *Id.* Melvill and Standen, Journ. of Conch., viii., 1897, p. 399. *Id.* Bouge and Dautzenberg, Journ. of Conch., lxi., 1913 (1914), p. 151.

*Hab.* Queensland:—Rocky Isle, off Cape Flattery (self).

MACTEOLA SEGESTA *Chenu*, var. CINCTURA *var. nov.*

(Plate liii., fig. 156.)

*Columbella segesta* Chenu, Illustr. Conch., 1850, pl. xxvi., figs. 5, 6. *Id.* Kobelt, Conch. Cab., 1896, p. 321, pl. xliii., fig. 10.

*Daphnella bella* Pease, Proc. Zool. Soc., 1860, p. 147. *Id.* Martens and Langkavel, Donum Bismarck., 1871, p. 1, pl. i., fig. 4.

*Mangilia bella* Melvill and Standen, Journ. of Conch., viii., 1897, p. 98. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 146. *Id.* Oliver, Trans. N.Z. Inst., xlvii., 1914 (1915), p. 537.

*Pleurotoma gemmulata* Deshayes, Moll. de Réunion, 1863, p. 107, pl. xii., figs. 8-10. *Id.* G. and H. Nevill, Journ. Asiat. Soc. Bengal, xliv., 1875, p. 86.

An Australian form, var. *cinctura*, seems separable by its rather more prominent ribs, and by a girdle of solid black which replaces the usual zone of short broken spiral lines.

*Hab.* Queensland:—Rocky Isle (type of *cinctura*); Two Isles, off Cape Flattery; Lizard Island (self).

MACTEOLA THESKELA *Melvill* and *Standen.*

*Mangelia (Glyphostoma) theskela* Melvill and Standen, Journ. of Conch., viii., 1895, p. 97, pl. iii., fig. 25 (not 26), and 1897, p. 451, pl. xi., fig. 81. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 156. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 178.

*Hab.* Queensland:—Rocky Isle, off Cape Flattery (self).

## Sub-family DAPHNELLINÆ.

DAPHNELLA *Hinds.*

*Daphnella* Hinds, Zool. Voy. "Sulphur," 1844, p. 25. *Id.* Herrmannsen, Index Gen. Moll., i., 1846, appointing type *D. lymneiformis* Kiener.

This genus is well characterised by a thin shell, elongate-ovate form, sharp outer lip, position of the sinus on the line of the advancing suture, and by the reduction of the canal.

The species recorded by Brazier[86] as *Daphnella subula* proves to be *Hemidaphne axis*, and his *D. pluricarinata* is here introduced as *D. cheverti*.

An Australian Tertiary fossil, described by Tenison-Woods as *Daphnella gracillima*, was by Harris[87] created the type of a new genus *Teleochilus*. Probably it does not belong to this family.

### Daphnella aculeola *Hedley.*

*Daphnella aculeola* Hedley, Proc. Linn. Soc. N.S.W., xxxix., 1915, p. 728, pl. lxxxii., fig. 58.

*Hab.* N. S. Wales:—Port Jackson (type, self).

### Daphnella arafurensis *Smith.*

*Pleurotoma (Daphnella) arafurensis* Smith, Zool. Coll. "Alert," 1884, p. 40, pl. iv., fig. G.

*Hab.* Queensland:—32 to 36 fathoms, Arafura Sea (type, Coppinger); 12 fathoms, Torres Straits (Brazier); 4 to 14 fathoms, Albany Pass (self).

### Daphnella aulacoessa *Watson.*

*Clathurella (Daphnella) aulacoessa* Watson, Journ. Linn. Soc., Zool., xv., 1881, p. 472. *Id.* Chall. Rep. Zool., xv., 1886, p. 367, pl. xxiii., fig. 9.

*Hab.* Queensland:—28 fathoms, west of Cape York (type, "Challenger"); 10 fathoms, Mapoon; 4 to 14 fathoms, Albany Passage; 5 to 10 fathoms, Palm Island; 5 to 10 fathoms, Hope Island (self).

### Daphnella boholensis *Reeve.*

*Pleurotoma boholensis* Reeve, Conch. Icon., i., 1843, pl. 13, fig. 112.

*Daphnella boholensis* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 60. *Id.* Melvill and Standen, Journ. of Conch., viii., 1897, p. 403. *Id.* Couturier, Journ. de Conch., lv., 1907, p. 130. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 208.

With doubt a single specimen of a species not hitherto recognised as Australian is thus recorded.

*Hab.* N. S. Wales:—Norah Head (Coll. W. H. Hargraves).

[86] Brazier—Proc. Linn. Soc. N.S.W., i., 1876, p. 158.

[87] Harris—Brit. Mus. Cat. Austr. Tert. Moll., 1897, p. 64.

### Daphnella botanica *Hedley.*

(Plate liii., figs. 157, 158, 159.)

*Daphnella botanica* Hedley, Journ. Roy. Soc. N.S.W., li., 1918, suppl. p. M. 83.

The first record of *Daphnella* from Australia was by G. F. Angas, who in 1867 reported *D. crebriplicata* Reeve and *D. lymnæformis* (sic) Kiener from Sydney, and in 1880 *D. fragilis* Reeve from Aldinga Bay, South Australia.[88] Actually these three names refer to a single species for which none of them can be used. According to the types in the South Kensington Museum, the Sydney species differs from the Philippine *D. crebriplicata* by being more delicately sculptured and more regularly fusiform. *D. lymneiformis* Kiener is a very distinct West Indian species. The spelling used by Angas showed that he took for this species the interpretation of Reeve, who figured another species under Kiener's name. *Pleurotoma fragilis* Reeve was described without locality, but Smith[89] has recognised it from Japan, while Bouge and Dautzenberg[90] had it from New Caledonia.

The representation of *P. fragilis* does not agree precisely with the Sydney shell, being a little broader and shorter, with less definite radial sculpture. We are, however, relieved of the difficulty of identifying this obscure species by the accident of a prior name. Eleven years previous to Reeve's description a fossil of the Paris Basin had received the name of *Pleurotoma fragilis* from Deshayes.[91] Accordingly the Sydney shell being thus left nameless, is introduced as *Daphnella botanica*, in reference to Botany Bay, *i.e.* New South Wales, and is defined thus:—

Shell slender-fusiform, slightly contracted at the base, spire produced. Colour:—On a buff ground the whole surface is irregularly clouded or mottled with burnt umber, the dark spaces often predominating. Whorls six, plus the protoconch, rounded, wound obliquely, excavated at the fasciole, and angled below it. Sculpture:—The protoconch of two and a half whorls is microscopically obliquely reticulated; the last whorl has about forty spiral threads, the penultimate twelve, and so on till the topmost with three is reached; between the larger threads smaller ones are intercalated, and gradually enlarge till of equal size; small sharp radials, close set at the rate of about eighty to a whorl, over-ride the spirals and produce beads at the points of intersection; these extend unbroken across the whole shell. Aperture oblique elliptical, half the length of the shell; outer lip thin and arched forward; notch deep and broad; inner lip excavating the sculpture of raised network in its path of advancement; columella with a thin callus deposit. Length 20 mm., breadth 7 mm.

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[88] Angas—Proc. Zool. Soc., 1867, p. 203; 1880, p. 416.

[89] Smith—Proc. Zool. Soc., 1879, p. 198.

[90] Bouge and Dautzenberg—Journ. de Conch., lxi., 1914, p. 209.

[91] Deshayes—Descrip. Coq. Foss. Paris, ii., 1834, p. 480, pl. lxvii., figs. 25, 26, 27.

Station:—The under surface of loose boulders at low tide level.

*Hab.* N. S. Wales:—Bottle and Glass Reef, Port Jackson (type, Brazier); Botany Heads (Hargraves). Victoria:—Western Port (Gabriel). South Australia:—St. Vincent Gulf (Verco). Western Australia (Museum Collection). Queensland:—5 to 10 fathoms, Hope Island (self).

DAPHNELLA CESTRUM *sp. nov.*

(Plate liii., fig. 160.)

*Clathurella debilis* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 155 (not *Clavatula debilis* Hinds, Zool. "Sulphur," i., 1844, p. 17, pl. v., fig. 16).

Shell acicular, thin, but boldly sculptured, contracted at the suture, excavate at the base; canal produced and recurved. Colour pale yellow, with two rufous brown zones, one above, the other below the periphery, both interrupted by the ribs; columella lilac; apex salmon buff. Whorls eleven, including three on the protoconch. Suture impressed, undulating. Base defined by a sharp angle which continues the horizon of the suture. Sculpture:—The fasciole area is without spirals, but is crossed by radial crescentic wrinkles; spirals may amount to twenty-seven on the last whorl, those on the periphery being alternately larger and smaller; seven of these ascend the penultimate whorl; all of these over-ride the radials; the radials are thin, high, variciform riblets, perpendicular, discontinuous, extending from below the fasciole to the angle of the base, and set at eight to a whorl. Aperture:—Outer lip simple; sinus adjacent to the suture, deeper than broad, rounded; inner lip with a thin callus; canal open, produced, and recurved. Length 10 mm., breadth 3 mm.

This shell differs from the figure of *C. debilis*, with which Brazier had identified it, by fewer bolder ribs and excavate base. In sculpture it approaches *Daphnella elegantissima* Schepman,[92] from which it differs by the narrower form, hollow base, and produced canal of *D. cestrum*.

*Hab.* Queensland:—20 fathoms, Darnley Island (type, Brazier); 20 fathoms, Endeavour Reef (McCulloch); 15 fathoms, Palm Islands (self).

DAPHNELLA CHEVERTI *sp. nov.*

(Plate liii., fig. 161.)

*Daphnella pluricarinata* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 159 (not *Pleurotoma pluricarinata* Reeve, Conch. Icon., i., 1845, pl. xxii., fig. 288).

Shell small, thin, narrow-fusiform, subturreted, blunt at apex, and attenuate anteriorly. Colour ochraceous-buff, gradually becoming darker towards the apex. Whorls six, of which three compose the protoconch, the last whorl rounded, the earlier ones angled at the shoulder. Sculpture delicate. The radials are close thin lamellæ which do not surmount the

[92] Schepman—Siboga Exped. Moll. Monogr. xlixe., 1913, p. 144, pl. xxix., fig. 8.

spirals, but rise into scales along the sutures. The spirals are sharp widely-spaced threads, of which there are twenty on the body whorl, evenly distributed between the fasciole and the end of the canal; five of these ascend the penultimate. Aperture simple; lip thin; sinus wide and shallow; canal produced. Length 6·5 mm., breadth 2·6 mm.

The single specimen which Brazier identified as *D. pluricarinta* differs from authentic Philippine examples of that species by being shorter and broader, with more inflated whorls and more prominent spirals. Nearer related is *D. cymatodes* Hervier, than which *D. cheverti* is smaller, more slender, and with more prominent sculpture.

*Hab.* Queensland:—30 fathoms, Darnley Island (type, Brazier).

### Daphnella diluta *Sowerby.*

*Daphnella diluta* Sowerby, Proc. Malac. Soc., ii., 1896, p. 26, pl. iii., fig. 6.
*Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 321.

*Hab.* South Australia:—St. Vincent Gulf (type); 55 fathoms, Cape Borda; 17 fathoms, Backstairs Passage (Verco).

### Daphnella granata *sp. nov.*

(Plate liii., fig. 162.)

Shell rather small, solid, ovate, and sharply gradate. Colour uniform buff. Whorls seven, inclusive of the protoconch, contracted at the suture, angled at the shoulder, rounded at the periphery, and hollowed at the base. Sculpture:—Surface reticulated by elevated flat-topped spirals and radials; on the upper whorls these are of equal value, and enclose deep square meshes; the radials amount on the last whorl to twenty-five, and on the antepenultimate to about twenty; they gradually diminish in size anteriorly and vanish on the base; on the last whorl there are about seventeen spirals, not counting a few minute interstitial threads; on the penultimate there are three and on earlier whorls two spirals; the protoconch consists of two rounded whorls, superficially smooth, but on high magnification developing faint and minute oblique reticulation. Aperture imperfect in the only example seen. Length 6·5 mm., breadth 3 mm.

This species is related to *D. aulacoessa* Watson, but is more solid and proportionately broader, the revolving and transverse cords few, and the reticulation coarser.

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (type, self).

### Daphnella marmorata *Hinds.*

*Daphnella marmorata* Hinds, Zool. "Sulphur," 1844, p. 25, pl. vii., fig. 19.
*Id.* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 159.

*Pleurotoma daphnelloides* Reeve, Conch. Icon., i., 1845, pl. xxiv., fig. 208.
*Id.* Hedley, Proc. Linn. Soc. N.S.W., xxxii., 1907, p. 484.

*Hab.* Queensland :—30 fathoms, Darnley Island (Brazier); 8 fathoms, Weary Bay; 15 fathoms, Palm Island; 17 to 20 fathoms, Mast Head Island (self).

### Daphnella ornata *Hinds.*

*Daphnella ornata* Hinds, Zool. "Sulphur," 1844, p. 25, pl. vii., fig. 21. *Id.* Schmeltz, Mus. Godeffroy Cat., iv., 1869, p. 90. *Id.* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 158. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 210.

*Daphnella tessellata* Garrett, Proc. Acad. Nat. Sci. Philad., 1873, p. 230, pl. iii., fig. 61.

*Hab.* Queensland :—20 fathoms, Darnley Island (Brazier); Lizard Island (self).

### Daphnella sigmastoma *sp. nov.*

(Plate liv., figs. 163, 164.)

*Clathurella arctata* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 294 (not *Pleurotoma arctata* Reeve, Conch. Icon., i., 1845, pl. xxxii., fig. 294).

Shell small, elongate-fusiform. Colour uniform pale yellow, except the apex, which is buff. Whorls rounded, ten, including those of the elevated protoconch. Sculpture :—The fasciole is narrow, excavate, and crossed by close-set scales; the radials are arcuate round-backed riblets, parted by interstices of equal breadth, fading out on the base, absent behind the varix, amounting to thirteen on the antepenultimate; the spirals are close narrow threads, alternating in size on the peripheral area, and over-riding the riblets; on the last whorl there are twenty-five, of which ten ascend the penultimate. Aperture fortified by a broad and high varix, from which a free limb reaches across the mouth, reducing the width of the aperture. The sinus is a long and narrow fold. Within the lip and beneath the sinus are two small denticules. Columella perpendicular; canal short and wide. Length 8·5 mm., breadth 3 mm.

*Hab.* Queensland :—15 fathoms, Palm Island (type); 5 to 10 fathoms, Hope Island (self); 4 to 14 fathoms, Albany Passage (self); 20 fathoms, Endeavour Reef (McCulloch); 20 fathoms, Darnley Island (Brazier).

The group to which this and *D. cestrum* belong are separated from typical *Daphnella* by slender form, prominent ribs and varix. *Clathurella papuensis* Tapparone Canefri,[93] which I only know from the figure, is perhaps related.

### Daphnella stiphra *Verco.*

*Daphnella stiphra* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 322, pl. xxv., figs. 5, 6.

*Hab.* South Australia :—300 fathoms, Cape Jaffa (type); 15 fathoms, Wallaroo (Verco); 365 fathoms, Cape Martin (self).

[93] Tapparone Canefri—Bull. Soc. Zool. France, iii., 1878, p. 247, pl. vi., figs. 5, 6.

DAPHNELLA TERINA *Melvill* and *Standen.*

*Daphnella terina* Melvill and Standen, Journ. of Conch., viii., 1896, p. 296, pl. x., fig. 43. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 212.

Specimens of this species from Funafuti were erroneously recorded by myself as *Daphnella lymneiformis* Kiener.[94]

*Hab.* Queensland:—30 fathoms, Darnley Island (Brazier); 5 to 8 fathoms, Murray Island (self).

VEPRECULA *Melvill.*

*Veprecula* Melvill, Proc. Malac. Soc., xii., 1917, p. 188.

This genus is distinguished by a slender fusiform shell, which is reticulated by radial and spiral cords, producing a sharp point at each intersection. The protoconch is tall and elaborately frilled, and the sutural sinus is deep and narrow. Type *Clathurella sykesii* Melvill and Standen, 1903.

Besides the following Australian species and the type two Indian species are included—*Pleurotoma asperulata* Smith, 1882, and *P. reticulosa* Smith, 1882, as well as *V. cooperi* Mestayer, 1919, from New Zealand.

VEPRECULA SCALA *sp. nov.*

(Plate liv., fig. 165.)

Shell slender, fusiform, excavate at the base and below the suture. Colour burnt sienna, with a cream zone on the shoulder of the last whorl. A tall and narrow protoconch of four whorls, delicately radially ribbed, is followed by five adult whorls. Sculpture:—Spaced spiral cords over-run the ribs and form small scales on their summits, four on the penultimate, then three and two on earlier whorls; on the final whorl they extend to the tip of the snout, and number about sixteen; the radial ribs are closely packed above, and are more spaced as they descend; on the last whorl they decrease to six in number, and are narrow, erect, and oblique; they vanish on the base. Aperture:—Canal produced, and a little twisted; notch sutural, rather deep and narrow. Length 5·5 mm., breadth 2 mm.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (type, self); 10 fathoms, York Island (Brazier).

VEPRECULA VACILLATA *sp. nov.*

(Plate liv., fig. 166.)

Shell small, acuminate, excavate at the base and below the suture. Colour buff, sometimes suffused with chocolate. An acicular protoconch of three whorls is followed by five adult whorls. Sculpture:—Deep square

[94] Hedley—Mem. Austr. Mus., iii., 1899, p. 476.

meshes are enclosed by radial and spiral cords, with small prickles at the point of intersection; both radials and spirals vary in their development; on the last whorl there may be from nine to twelve radials, and from fifteen to eighteen spirals; on the upper whorl there are from three to five spirals, the peripheral one dominating. Aperture:—The notch is sutural and rather deep; the outer lip is dentate by the projection of the spirals; the canal is rather long and straight. Length 5·5 mm., breadth 2 mm.

This species approaches the Indian *V. asperulata*, in which the sculpture is much finer.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island (type); 5 to 8 fathoms, Palm Island; 17 to 20 fathoms, Mast Head Island (self).

Var. PAUCICOSTATA *var. nov.*

(Plate liv., fig. 167.)

With fewer spiral cords than in the typical form, the specimen here figured has six radials.

*Hab.* Queensland:—Murray Island and Hope Island (self).

VEPRECULA VEPRATICA *Hedley.*

(Figure 9.)

*Pleurotoma vepratica* Hedley, Mem. Austr. Mus., iv., 1903, p. 384, fig. 97.

*Clathurina (Veprecula) vepratica* Melvill, Proc. Malac. Soc., xii., 1917, p. 140, pl. x., fig. 14.

This is larger than the other Australian species. Dr. J. C. Melvill has lately extended the range of it to Japan and the Persian Gulf. The citation in the original account of this species from Torres Straits refers to a specimen of *V. vacillata*.

*Hab.* N. S. Wales:— 24 to 100 fathoms, Wollongong to Port Stephens ("Thetis").

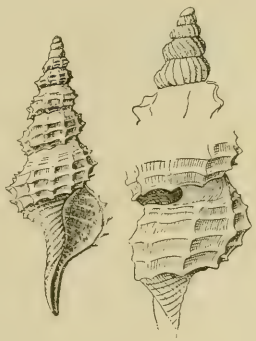

Fig. 9.

HEMIDAPHNE *Hedley.*

*Hemidaphne* Hedley, Journ. Roy. Soc. N.S.W., li., 1918, suppl. p. M 83. Type *Pleurotoma souverbiei* Smith, 1882.

A genus of the *Daphnellinæ*, distinguished from *Daphnella* by more cylindrical form, more solid shell; usually carrying widely-spaced strong radiating ribs on the upper whorls, while the lower are comparatively smooth.

This group was early segregated, though not named, by G. and H. Nevill[95] as for a section of *Clathurella*. By Boettger[96] it was confused with *Paraclathurella*, but Smith, who better appreciated the real relationship of *Hemidaphne*, remarked[97] on the difference of the apex.

Besides the Australian species here discussed, the following extralimital species may be included in this genus:—*Pleurotoma lirata* Reeve, 1845; *Pleurotoma reeveana* Deshayes, 1863=*Pleurotoma concinna* Dunker, 1856 (not Scacchi, 1836)=*Clathurella tumida* Pease, 1867; *Pleurotoma subula* Reeve, 1845; and *Daphnella supracancellata* Schepmann, 1913.

### Hemidaphne axis *Reeve.*

*Pleurotoma axis* Reeve, Conch. Icon., i., Jan. 1846, pl. xxxiv., fig. 311, and Proc. Zool. Soc., May 1846, p. 3. *Id.* Smith, Zool. "Alert," 1884, p. 40.

*Clathurella axis* Boettger, Nach. Malak. Gesell., xxvii., 1895, p. 57. *Id.* Hidalgo, Revist. Acad. Cienc. Madrid, i., 1904, p. 340.

*Daphnella axis* Melvill and Standen, Proc. Zool. Soc., 1901, p. 447. *Id.* Melvill, Proc. Malac. Soc., xii., 1917, p. 191.

*Daphnella subula* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 158 (not *Pleurotoma subula* Reeve).

*Hab.* Queensland:—14 fathoms, Port Molle (Coppinger); 8 to 30 fathoms, Darnley Island (Brazier).

### Hemidaphne cyclophora *Deshayes.*

(Plate liv., fig. 168.)

*Pleurotoma cyclophora* Deshayes, Moll. de Reunion, 1863, p. 111, plate xii., figs. 19-21.

*Clathurella cyclophora* G. and H. Nevill, Journ. Asiat. Soc. Bengal, xliv., 1875, p. 88.

*Mangelia cyclophora* von Martens, in Mobius Meeresfauna Mauritius, 1880, p. 228.

The Australian shell is 10 mm. long, and therefore considerably larger than the type, which is only 7 mm. long; but judging from literature, this form may be counted as a variety of the species of Deshayes. To facilitate recognition it is here figured.

*Hab.* Queensland:—Murray Island and Mast Head Island (self).

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[95] G. and H. Nevill—Journ. Asiat. Soc. Bengal, xliv., 1875, p. 88.

[96] Boettger—Nachr. Malak. Gesell., xxvii., p. 57.

[97] Smith—Zool. Coll. "Alert," p. 39.

HEMIDAPHNE RISSOIDES *Reeve.*

*Pleurotoma rissoides* Reeve, Conch. Icon., i., 1843, pl. xiii., fig. 111, and Proc. Zool. Soc., 1843 (1844), p. 184.

*Clathurella rissoides* Tryon, Man. Conch., vi., 1884, p. 281, pl. xxvii., figs. 8, 9. *Id.* Boettger, Nachr. Malak. Gesell., 1895, p. 57. *Id.* Melvill and Standen, Journ. of Conch., viii., 1897, p. 403. *Id.* Hidalgo, Revist. Acad. Cienc. Madrid, i., 1904, p. 342.

*Daphnella rissoides* M'Andrew, Ann. Mag. Nat. Hist. (4), vi., 1870, p. 438. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 211.

*Pleurotoma dentatum* Souverbie, Journ. de Conch., xvii., 1869, p. 418, and xviii., 1870, p. 431, pl. xiv., fig. 5.

*Daphnella dentata* Hervier, Journ. de Conch., xliv., 1869, p. 149.

*Pusionella testabilis* Jousseaume, Le Naturaliste, x., 1896, p. 43, *fide* E. A. Smith in Fulton, Proc. Malac. Soc., xv., 1922, p. 27.

*Hab.* Queensland:—Murray and Palm Islands (self).

HEMIDAPHNE SOUVERBIEI *Smith.*

*Pleurotoma (Daphnella) souverbiei* Smith, Ann. Mag. Nat. Hist. (5), x., 1882, p. 300. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxxiii., 1908, p. 488, pl. viii., fig. 9.

*Daphnella souverbiei* Hedley, Journ. Roy. Soc. W.A., i., 1916, p. 206.

This species is related to *H. rissoides*, but is larger and lacks the coloured apex of that shell.

*Hab.* Western Australia:— Swan River (type, British Museum). Queensland:—Burleigh Heads (G. Gross).

EXOMILUS *Hedley.*

*Exomilus* Hedley, Journ. Roy. Soc. N.S.W., li., 1918, suppl. p. M 81. Type *Mangelia lutraria* Hedley.

Shell small, subcylindrical. Whorls few. Base concave. Sculpture:— Radial ribs latticed by spiral cords. Outer lip slightly thickened, denticulate within. Sinus shallow, subsutural.

This group has some resemblance to *Pseudodaphnella*, and may be an offshoot from that genus which has assumed a narrower contour and migrated to cooler and deeper water.

EXOMILUS ANXIUS *Hedley.*

*Mangilia anxia* Hedley, Proc. Linn. Soc. N.S.W., xxxiv., 1909, p. 455, pl. xliii., fig. 89.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island (type); 5 to 8 fathoms, Murray Island; 17 to 20 fathoms, Mast Head Island (self); off Cairns Reef (McCulloch).

EXOMILUS CANCELLATUS *Beddome.*

*Mangilia cancellata* Beddome, Proc. Roy. Soc. Tasm., 1882, p. 167.

*Drillia cancellata* Tate and May (not of Carpenter, 1865), Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 368, pl. xxiv., fig. 27. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 306.

*Hab.* Tasmania:—Tamar River (type); Circular Head (Petterd); Frederick Henry Bay (May).

EXOMILUS DYSCRITOS *Verco.*

*Terebra dyscritos* Verco, Trans. Roy. Soc., S.A., xxx., 1906, p. 149, pl. iv., figs. 3, 4, 5.

*Mangilia dyscritos* Hedley and May, Rec. Austr. Mus., vii., 1908, p. 112. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 315.

*Hab.* South Australia:—22 fathoms, St. Vincent Gulf (type); 100 fathoms, Beachport; 130 fathoms, Cape Jaffa; 55 fathoms, Cape Borda (Verco). Tasmania:—100 fathoms, Cape Pillar (Hedley and May).

EXOMILUS FENESTRATUS *Tate* and *May.*

*Donovania fenestrata* Tate and May, Trans. Roy. Soc., S.A., xxiv., 1900, p. 94, and Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 372, pl. xxiv., fig. 36. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xviii., 1906, p. 52. *Id.* Hedley and May, Rec. Austr. Mus., vii., 1908, p. 112. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 271, pl. xxi., figs. 8, 9.

*Trophon fenestratus* May, Check List Mollusca, Tasmania, 1921, p. 85.

*Hab.* Tasmania:—East Coast (type); 100 fathoms, Cape Pillar (May). South Australia:—McDonnell Bay (Torr); 110 fathoms, Beachport; 130 fathoms, Cape Jaffa (Verco). Victoria:—Flinders (Gatliff).

EXOMILUS LUTRARIUS *Hedley.*

*Mangelia lutraria* Hedley, Rec. Austr. Mus., vi., 1907, p. 296, pl. liv., figs. 11, 12.

*Hab.* N. S. Wales:—80 fathoms, 22 miles east of Narrabeen (type, self).

EXOMILUS PENTAGONALIS *Verco.*

*Drillia pentagonalis* Verco, Trans. Roy. Soc. S.A., xx., 1896, p. 222, pl. vii., fig. 6. *Id.* Hedley, Rec. Austr. Mus., vi., 1907, p. 298. *Id.* May, Proc. Roy. Soc. Tasm., 1915, p. 76.

*Hab.* South Australia:— Backstairs Passage (type, Verco). Tasmania:—40 fathoms, Schouten Island; 50 to 70 fathoms, Port Arthur (May). N.S.Wales:—80 fathoms, Narrabeen (self).

EXOMILUS SPICA *Hedley.*

*Mangilia spica* Hedley, Rec. Austr. Mus., vi., 1907, p. 297, pl. lv., fig. 20, and vii., 1908, p. 112. *Id.* Verco, Trans. Roy. Soc. S.A., xxxi., 1907, p. 215, and xxxiii., 1909, p. 314.

*Hab.* N. S. Wales:—80 fathoms, Narrabeen (type); 100 fathoms, Wollongong (self). Tasmania:—100 fathoms, Cape Pillar (Hedley and May). South Australia:—110 fathoms, Beachport; 130 fathoms, Cape Jaffa (Verco).

EXOMILUS TELESCOPIALIS *Verco.*

*Drillia telescopialis* Verco, Trans. Roy. Soc. S.A., xx., 1896, p. 222, pl. vii., fig. 1. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 172.

*Hab.* South Australia.—Backstairs Passage (type, Verco). Victoria:—Portsea (Hall).

NEPOTILLA *Hedley.*

*Nepotilla* Hedley, Journ. Roy. Soc. N.S.W., li., 1918, suppl. p. M 83, Type *Daphnella bathytoma* Verco.

This genus of the *Daphnellinæ* is allied to *Eucyclotoma* by its spirally grooved protoconch, but distinguished therefrom by minute size, turreted spire, and few whorls.

This group is mainly southern, and from deep water. In south New Zealand it is represented by *Daphnella totolirata* Suter, and *Mangilia flexicostata* Suter. Apart from its different protoconch, *Pleurotoma hirsutum* de Folin has a general resemblance in size, shape, and sculpture to *Nepotilla.*

NEPOTILLA ACULEATA *May.*

*Taranis aculeata* May, Proc. Roy. Soc. Tasm., 1915, p. 83, pl. i., fig. 1.
*Hab.* Tasmania:—50 fathoms, Thouin Bay (type, May).

NEPOTILLA BATHENTOMA *Verco.*

*Daphnella bathentoma* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 326, pl. xxviii., fig. 3. *Id.* May, Proc. Roy. Soc. Tasm., 1910, p. 308.

*Hab.* South Australia:—104 fathoms, Neptune Island (type, Verco). Tasmania:—100 fathoms, Cape Pillar (May). N.S.Wales:—80 fathoms, Narrabeen; and 100 fathoms, Wollongong (self).

NEPOTILLA DIAPHANA *May.*

*Nepotilla diaphana* May, Proc. Roy. Soc. Tasm., 1919, p. 56, pl. xiv., fig. 3.

*Hab.* Tasmania:—Frederick Henry Bay (type); Thouin Bay (May).

NEPOTILLA EDWINI *Brazier.*

*Pleurotoma (Clathurella) edwini* Brazier, Proc. Linn. Soc. N.S.W. (2), ix., 1894, p. 168, pl. xiv., fig. 3.

*Taranis edwini* May, Proc. Roy. Soc. Tasm., 1908, p. 53.

*Hab.* N. S. Wales:—Port Jackson (type, Henn). Tasmania:—100 fathoms, Cape Pillar (May).

NEPOTILLA EXCAVATA *Gatliff.*

*Daphnella excavata* Gatliff, Proc. Roy. Soc. Vict., xix., 1906, p. 1, pl. i., figs. 1, 2. *Id.* Hedley and May, Rec. Austr. Mus., vii., 1908, p. 112. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 327.

*Hab.* Victoria:— Point Nepean (type, Gatliff). Tasmania:—100 fathoms, Cape Pillar (Hedley and May). South Australia:—11 fathoms, Backstairs Passage (Verco). N.S.Wales:—Coogee (Brazier).

NEPOTILLA FENESTRATA *Verco.*

*Daphnella fenestrata* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 321, pl. xxviii., figs. 6, 7. *Id.* May, Proc. Roy. Soc. Tasm., 1915, p. 75.

*Hab.* South Australia:—104 fathoms, Neptune Island (type, Verco). Tasmania:—50 fathoms, Port Arthur (May).

NEPOTILLA LAMELLOSA *Sowerby.*

*Clathurella lamellosa* Sowerby, Proc. Malac. Soc., ii., 1896, p. 28, pl. iii., fig. 11.

*Daphnella lamellosa* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 325. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxii., 1910, p. 90. *Id.* May, Proc. Roy. Soc. Tasm., 1910 (1911), p. 308.

*Hab.* South Australia:—St. Vincent Gulf (type); 90 fathoms, Cape Jaffa; 110 fathoms, Beachport; 20 fathoms, St. Francis Island (Verco). Victoria:—Wilson's Promontory ("Endeavour"). Tasmania:—40 fathoms, Schouten Island; 100 fathoms, Cape Pillar (May).

NEPOTILLA MICROSCOPICA *May.*

*Taranis microscopica* May, Proc. Roy. Soc. Tasm., 1915, p. 84, pl. i., fig. 2.

*Daphnella microscopica* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxix., 1916, p. 108.

*Hab.* Tasmania:—40 fathoms, Thouin Bay (type, May); Bass Straits (Gatliff and Gabriel).

NEPOTILLA MINUTA *Tenison-Woods.*

*Drillia minuta* Tenison-Woods, Proc. Roy. Soc. Tasm., 1876 (1877), p. 136. *Id.* May, Proc. Roy. Soc. Tasm., 1902, p. 110. *Id.* Hardy, Proc. Roy. Soc. Tasm., 1915, p. 68. *Id.* Tryon, Man. Conch., vi., 1884, p. 210, pl. xxxiv., fig. 93. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 172.

*Daphnella minuta* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., p. 372, pl. xxvi., fig. 28.

*Daphnella mimica* var. *fusca* Sowerby, Proc. Malac. Soc., ii., 1896, p. 27.

*Hab.* Tasmania:—Bruni Island (type); Frederick Henry Bay (May). Victoria:— Western Port (Pritchard). South Australia:— St. Vincent Gulf (Adcock).

NEPOTILLA MIMICA *Sowerby.*

*Daphnella mimica* Sowerby, Proc. Malac. Soc., ii., 1896, p. 27, pl. iii., fig. 10. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xviii., 1906, p. 52.

*Daphnella minuta* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 326.

*Hab.* South Australia:—St. Vincent Gulf (type); 90 fathoms, Cape Jaffa; 20 fathoms, St. Francis Island (Verco). Victoria:—Western Port (Pritchard). Tasmania:—40 to 50 fathoms, Schouten Island (May).

VAR. MARMORATA *Verco.*

Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 327.

NEPOTILLA TRISERIATA *Verco.*

*Daphnella triseriata* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 325, pl. xxviii., fig. 8. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxvi., 1913, p. 74. *Id.* May, Proc. Roy. Soc. Tasm., 1910, p. 308.

*Hab.* South Australia:—100 fathoms, Beachport (type); 90 to 130 fathoms, Cape Jaffa (Verco). Victoria:—40 fathoms, Ninety-Mile Beach (Gatliff and Gabriel). Tasmania:—40 fathoms, Schouten Island (May).

NEPOTILLA TROPICALIS *sp. nov.*

(Plate liv., fig. 169.)

*Daphnella excavata* Hedley, Proc. Linn. Soc. N.S.W., xxxiii., 1907, p. 507 (not *D. excavata* Gatliff).

Shell small, subscalar. Colour dull white. Whorls four, of which one and a half form the protoconch. Each whorl spreads in a broad shelf above, and thence narrows anteriorly. Sculpture:—On the last whorl there are four, and on the earlier two, spiral cords, the topmost running along the angle of the shell; the radials which over-ride these are thin

elevated lamellæ, commencing at the suture and ending as imbricating scales on the snout; there are sixteen on the last whorl. Aperture:—Lip simple, sinus short and subsutural; canal short. Length 1·55 mm., breadth 0·85 mm.

Allied to *N. excavata*, to which at first I had referred it. On reconsideration I think it separable by shorter, broader form, and by more numerous radials, which do not project at the shoulder as in *excavata*.

*Hab.* Queensland:—17 to 20 fathoms, Mast Head Island (type, self).

ASPERDAPHNE *nom. nov.*

*Asperdaphne nom. nov.* for *Scabrella* Hedley, Journ. Roy. Soc. N.S.W., li., 1918, suppl. p. M. 83 (not *Scabrella* Sacco, Moll. Piemonte Liguria, pt. vi., 1890, p. 54, type *Columbella scabra* Bellardi). Type *Daphnella versivestita* Hedley.

This genus resembles *Daphnella* in form and general appearance, but differs in having the nucleus spirally grooved instead of being obliquely reticulated. The contour is lanceolate rather than oval; the shell has usually more whorls, increasing less rapidly, with a longer and more turreted spire; and the anal fasciole is usually more marked than in *Daphnella*, being more excavate, and crossed by sharp crescentic riblets. Some members of this genus have a superficial resemblance to *Defrancia*, under which genus they have been arranged.

*Clathurella dictyota* Hutton, and *Daphnella aculeata* Webster, from New Zealand, may be included here.

The citation by Schmeltz[98] of *Defrancia pumila* Mighels from Bass Straits is an obvious error. *Clathurella reticosta* Adams and Angas[99] [100] is a synonym of the British *Mangilia purpurea* Montagu.

ASPERDAPHNE ALBOCINCTA *Angas.*

(Plate liv., fig. 170.)

*Clathurella albocincta* Angas, Proc. Zool. Soc., 1871, p. 18, pl. i., fig. 22. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxi., 1908, p. 376.

*Hab.* N.S.Wales:—Sow and Pigs Reef, Port Jackson (type, Brazier); Dudley; Twofold Bay (self). Victoria:—Port Albert (Gatliff and Gabriel).

ASPERDAPHNE AMPLECTA *sp. nov.*

(Plate liv., figs. 171, 172.)

*Clathurella amabilis* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 154 (not *Clavatula amabilis* Hinds, Zool. "Sulphur," 1844, p. 21, pl. vii., fig. 3).

[98] Schmeltz—Cat. Mus. Godeffroy, v., 1874, p. 132.
[99] Adams and Angas—Proc. Zool. Soc., 1863, p. 42.
[100] Hedley—Mem. Austr. Mus., iv., 1903, p. 390.

Shell fusiform. Whorls nine, including the protoconch. Colour dull white. Protoconch of two rounded microscopically spirally grooved whorls. Sculpture:—On the first adult whorl there are nine or ten radials, which decrease to six on the lower whorls; these are discontinuous, prominent, vertical, ceasing at the fasciole and on the base; the spirals are evenly spaced, sharp, elevated, over-riding and denticulating the ribs, increasing by intercalation from two above to about eighteen below; these are again traversed by a secondary sculpture of fine radiating threads; fasciole broad, excavate, crossed by close, sharp, and crescentic lamellæ. Aperture imperfect in my example; canal slightly twisted. Length 12 mm., breadth 5 mm.

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (type); 5 to 8 fathoms, Murray Island (self); 20 fathoms, Darnley Island (Brazier).

### Asperdaphne bastowi *Gatliff* and *Gabriel.*

*Daphnella bastowi* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xi., 1908, p. 365, pl. xxi., figs. 1-4. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 324.

*Hab.* Victoria:—Western Port (type, Gabriel). South Australia:—St. Vincent Gulf (Verco).

### Asperdaphne bela *nom. nov.*

*Bela tasmanica* May, Proc. Roy. Soc. Tasm., 1915, p. 84, pl. i., fig. 3 (not *Daphnella tasmanica* Tenison-Woods, 1877, now transferred to *Asperdaphne*).

*Hab.* Tasmania:—D'Entrecasteaux Channel; 10 fathoms, (type, May).

### Asperdaphne brenchleyi *Angas.*

(Figure 10.)

*Clathurella brenchleyi* Angas, Proc. Zool. Soc., 1877, p. 37, pl. v., fig. 12.

*Daphnella brenchleyi* Hedley, Mem. Austr. Mus., iv., 1903, p. 391, fig. 106.

*Hab.* N.S.Wales:—Port Stephens (type, Angas); 50 fathoms, Cape Three Points ("Thetis").

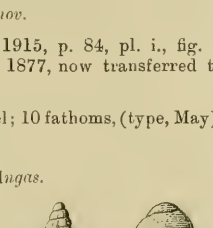

Fig. 10.

ASPERDAPHNE CAPRICORNEA *sp. nov.*

(Plate liv., fig. 173.)

Shell small, lanceolate, contracted at the sutures; substance rather thin and translucent. Colour either white, buff, or pale pink above, afterwards turning to buff or white; three apical whorls always darker, usually brown buff. Whorls seven and a half, including a protoconch of two whorls. Sculpture:—Fine spiral grooves, crossed by still finer radials, ornament the protoconch; the third whorl has a prominent keel on the shoulder, beneath which is a fainter spiral; on the fourth whorl the radials first appear as eight prominent round-backed ribs, crossed by two, afterwards three, spiral cords, forming deep meshes by their intersection; the ribs descend continuously and obliquely from whorl to whorl, but decrease in relative importance; the spirals multiply by intercalation till on the last whorl they amount to twenty-five, but there also they are insignificant compared to their initial stage; two or three of the peripheral spirals project beyond the succeeding fasciole; fasciole distinct, crossed by sharp thread-like radials. Aperture:—Sinus simple, rather shallow; inner lip with a slight callus; canal short and recurved. Length 4.5 mm., breadth 2 mm.

*Hab.* Queensland:—17 to 20 fathoms, Mast Head Island (type); 5 to 8 fathoms, Murray Island (self).

ASPERDAPHNE COMPACTA *sp. nov.*

(Plate lv., fig. 174.)

Shell small, rather solid, ovate-conic. Colour uniform buff. Whorls six, of which two compose the protoconch. Sculpture:—Protoconch is gradate, and coarsely, spirally, engraved; the subsequent whorls are rounded and excavate at the fasciole; radial ribs prominent, rounded, extending from the fasciole to the base, set their own breadth apart, about twelve to a whorl; the spirals are delicate threads over-riding the radials; on the last whorl they amount to twenty-four, of which three or four on the periphery are larger than the rest; fasciole sharply sculptured by crescentic lamellæ. Aperture imperfect in my material; sinus sutural, and of moderate depth. Length 6·5 mm., breadth 3 mm.

This species is broader and more harshly sculptured than *A. desalesii*. It is nearer to *A. legrandi*, but the apex is not so sharp, and the radial ribs of the last whorl are less prominent and more numerous. In error I have recorded[101] this as *Daphnella sculptior*.

*Hab.* N.S.Wales:—80 fathoms, off Narrabeen (type, self).

[101] Hedley—Rec. Austr. Mus., vi., 1907, p. 298.

ASPERDAPHNE DESALESII *Tenison-Woods.*

(Figure 11.)

*Mangelia de salesii* Tenison-Woods, Proc. Roy. Soc. Tasm., 1876 (1877), p. 138. *Id.* Hedley, Rec. Austr. Mus., iv., 1901, p. 23, fig. 4.

*Clathurella desalesi* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 371, pl. xxiv., fig. 32. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 310.

*Scabrella desalesii* May, Check-list Mollusca Tasmania, 1921, p. 78.

*Clathurella sculptior* Tenison-Woods, Proc. Roy. Soc. Tasm., 1878 (1879), p. 38. *Id.* Tryon, Man. Conch., vi , 1884, p. 282, pl. xxxii., fig. 27. *Id.* Hardy, Proc. Roy. Soc. Tasm., 1915, p. 65.

*Clathurella sexdentata* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 104, pl. viii., fig. 7.

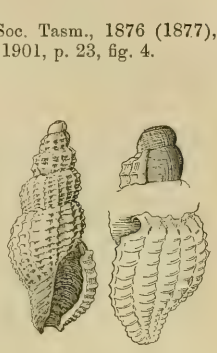

Fig. 11.

Mr. W. L. May, who enjoyed special opportunities for investigation, has kindly advised me on the above synonymy.

*Hab.* Tasmania:—4 fathoms, Long Bay (types of both *desalesii* and *sculptior*, Petterd); Frederick Henry Bay (May). Victoria:—Sorrento Beach (type of *sexdentata*, Gatliff). South Australia:—40 fathoms, Beachport; 130 fathoms, Cape Jaffa; St. Vincent Gulf (Verco).

ASPERDAPHNE ESPERANZA *May.*

*Hemipleurotoma esperanza* May, Proc. Roy. Soc. Tasm., 1910 (1911), p. 390, pl. xiii., fig. 15.

*Bathytoma gratiosa* Suter, from South New Zealand, is nearly related to this species.

*Hab.* Tasmania:—24 fathoms, Port Esperance (type); 40 fathoms, 3 miles east of Schouten Island (May).

ASPERDAPHNE HAYESIANA *Angas.*

*Clathurella hayesiana* Angas, Proc. Zool. Soc., 1871, p. 17, pl. i., fig. 17.

*Hab.* N.S.Wales:—Lane Cove (type, Brazier).

ASPERDAPHNE LEGRANDI *Beddome.*

*Drillia legrandi* Beddome, Proc. Roy. Soc. Tasm., 1882 (1883), p. 167.

*Clathurella legrandi* Pritchard and Gatliff, Proc. Roy. Soc. Vict. xii., 1900, p. 178. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxv., p. 509, pl. xxv., figs. 1, 2, 3.

*Daphnella legrandi* Gatliff and Gabriel, Proc. Roy. Soc., xxi., 1908, p. 375. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 323.

*Hab.* Tasmania:—D'Entrecasteaux Channel (type, Beddome). Victoria:—Portland (Maplestone); San Remo (Gatliff). South Australia:—20 fathoms, St. Vincent Gulf; 110 fathoms, Beachport; 15 to 35 fathoms, St. Francis Island (Verco).

ASPERDAPHNE MAYI *Verco.*

*Hemipleurotoma mayi* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 295, pl. xxv., fig. 2.

*Daphnella mayi* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxv., 1912, p. 170.

*Hab.* South Australia:—104 fathoms, Neptune Island (type, Verco); 300 fathoms, Cape Nelson; 365 fathoms, Cape Martin (self).

ASPERDAPHNE MORETONICA *Smith.*

*Pleurotoma (Defrancia) moretonica* Smith, Ann. Mag. Nat. Hist. (5), x., Oct. 1882, p. 299.

*Clathurella moretonica* Tryon, Man. Conch., vi., 1884, p. 299. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxxiii., 1908, p. 489, pl. viii., fig. 14.

*Hab.* Queensland:—Moreton Bay (type, Strange).

ASPERDAPHNE PERISSA *Hedley.*

*Mangilia perissa* Hedley, Proc. Linn. Soc. N.S.W., xxxiv., 1909, p. 459, pl. xliv., figs. 96, 97.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island (type, self).

ASPERDAPHNE PERPLEXA *Verco.*

*Daphnella perplexa* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 323, pl. xxviii., figs. 1, 2.

*Hab.* South Australia:—12 fathoms, Backstairs Passage (type); St. Vincent Gulf (Verco).

ASPERDAPHNE SCULPTILIS *Angas.*

*Clathurella sculptilis* Angas, Proc. Zool. Soc., 1871, p. 17, pl. i., fig. 1. *Id.* Tenison-Woods, Proc. Roy. Soc. Tasm., 1878 (1879), p. 38. *Id.* Tate and May, Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 37.

*Daphnella sculptilis* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxi., 1908, p. 375 (not *Daphnella sculptilis* Harris, Brit. Mus. Cat. Tert. Moll. Austr., 1897, p. 61).

*Daphnella angasi* Hedley, Mem. Austr. Mus., iv., 1903, p. 391.

*Hab.* N.S.Wales :—Sow and Pigs Reef, Port Jackson (type, Brazier); 41 to 50 fathoms, Cape Three Points ("Thetis"); 25 to 30 fathoms, Norah Head (McNeill and Livingstone). Tasmania :—Long Bay (Tenison-Woods). Victoria :—Western Port (Gatliff).

ASPERDAPHNE TASMANICA *Tenison-Woods.*

(Figure 12.)

Fig. 12.

*Daphnella tasmanica* Tenison-Woods, Proc. Roy. Soc. Tasm., 1876 (1877), p. 138. *Id.* Hardy, Proc. Roy. Soc. Tasm., 1915, p. 70. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxv., 1901, p. 725, text fig. 21. *Id.* May, Proc. Roy. Soc. Tasm., 1902, p. 110. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xviii., 1906, p. 52.

*Hab.* Tasmania :—D'Entrecasteaux Channel (type, Petterd). Victoria :—17 fathoms, Western Port (Gatliff). South Australia ;— 23 fathoms, St. Vincent Gulf; 35 fathoms, St. Francis Island (Verco).

VAR. BITORQUATA *Sowerby.*

*Daphnella bitorquata* Sowerby, Proc. Malac. Soc., ii., 1896, p. 27, pl. iii., fig. 10. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 324. *Id.* Gatliff and Gabriel, Proc. Roy. Soc. Vict., xxiii., 1910, p. 90.

*Hab.* South Australia :— Spencer and St. Vincent Gulfs (type, Adcock). Victoria :—San Remo (Gatliff).

ASPERDAPHNE VERCOI *Sowerby.*

(Plate lv., figs. 175, 176.)

*Clathurella brenchleyi* Tate, Trans. Roy. Soc. S.A., xvii., 1893, p. 199.

*Daphnella vercoi* Sowerby, Trans. Malac. Soc., ii., 1896, p. 27, pl. iii., fig. 8. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 320.

Dr. Verco thought that this should be reduced to a variety of *A. brenchleyi*. To me it seems that the geographic separation is sufficiently supported by the stronger and fewer radials and stouter form of *S. vercoi* to maintain it as a distinct species. Probably the South Australian shells identified by Professor Tate as *C. brenchleyi* were really a slender form of *A. vercoi*.

*Hab.* South Australia :—6 to 20 fathoms, Backstairs Passage (type); Investigator Strait; St. Vincent Gulf and Spencer Gulf (Verco).

ASPERDAPHNE VERSIVESTITA *Hedley.*

*Daphnella versivestita* Hedley, Rec. Austr. Mus., viii., 1912, p. 148, pl. xliii., fig. 33.

*Hab.* N.S.Wales :—Botany Heads (type); Woolgoolga to Gerringong.

ASPERDAPHNE VESTALIS *Hedley*.

(Figure 13.)

*Daphnella vestalis* Hedley, Mem. Austr. Mus., iv., 1903, p. 390, fig. 105.

*Hemipleurotoma vestalis* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 295.

*Hab.* N. S. Wales:— 41 to 50 fathoms, Cape Three Points (type); 24 fathoms, Port Stephens; 50 to 52 fathoms, Botany Heads ("Thetis"). South Australia:—104 fathoms, Neptune Island (Verco).

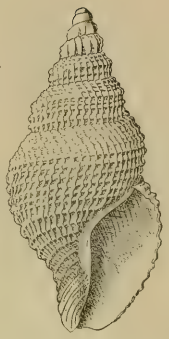

Fig. 13.

ASPERDAPHNE WALCOTÆ *Sowerby*.

*Drillia walcotæ* Sowerby, Proc. Zool. Soc., 1893, p. 487, pl. xxxviii., figs. 7, 8. *Id.* Sowerby, Proc. Malac. Soc., ii., 1896, p. 24.

*Clathurella walcotæ* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 307.

*Hab.* South Australia:—Spencers Gulf (type); MacDonnell Bay (Adcock); 20 fathoms, Backstairs Passage; 40 fathoms, Beachport; beach, St. Francis Island (Verco).

PSEUDODAPHNELLA *Boettger*.

*Pseudodaphnella* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 58. Type *Pleurotoma philippinensis* Reeve, 1843.

*Kermia* Oliver, Trans. N.Z. Inst., xlvii., 1914 (1915), p. 539. Type *Kermia benhami* Oliver, 1915.

*Clathurina* Melvill, Proc. Malac. Soc., xii., 1917, p. 185. Type *Pleurotoma foraminata* Reeve, 1845.

Though introduced more than twenty years ago, this generic name, *Pseudodaphnella*, has been refused recognition by most modern writers, who have distributed its constituents among *Mangilia*, *Clathurella*, or *Daphnella*.

The size is rather large. The colour may be various shades of brown or yellow, disposed often in dots on a white, sometimes opaque, ground. There is a small brown mucronate apex of two or three whorls, the first spirally engraved, the next with oblique lattice lines. The adult shell is netted over by elevate spirals and radials enclosing deep oblong meshes; at the points of intersection are small sharp cusps. The aperture is wide and free from tubercles or plications on the columella side, and generally without a varix. Sinus subsutural, broad, and shallow. There is no fasciole band distinguishable.

The genus is associated with reef corals, and has a habit of sheltering under loose stones between tide marks.

PSEUDODAPHNELLA ATTENUATA *sp. nov.*

(Plate lv., fig. 177.)

Shell rather solid and tall, lanceolate. Colour uniform yellow. Whorls seven remaining. Sculpture:—Large deep meshes are formed on the body of the shell by the intersection of the main sculpture; the ribs are nine on the penultimate and eleven on the last whorl, elevated, perpendicular, alternating from whorl to whorl, twice their breadth apart, vanishing on the base and below the suture; spirals sharp, elevated cords, thirteen on the body whorl, three on the penultimate, over-riding the ribs; on the snout the ribs only survive as nodules; along the fasciole area the spirals are entirely different, being three or four closely-packed threads. Aperture wide; varix taller and broader than the ribs; seven small denticules within the outer lip; sinus small and semicircular; canal short and wide. Length 11 mm., breadth 4 mm.

*Hab.* Queensland:—Beach, Murray Island (type, self).

PSEUDODAPHNELLA BARNARDI *Brazier.*

(Plate lv., fig. 178.)

*Clathurella barnardi* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 157.

*Clathurella tessellata* Hedley, Proc. Linn. Soc. N.S.W., xxxii., 1907, p. 484. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 205 (not *Clavatula tessellata* Hinds, Zool. "Sulphur," 1844, p. 23. pl. viii., fig. 17).

*Clathurella chichijimana* Pilsbry, Proc. Acad. Nat. Sci. Philad., 1904, p. 11, pl. i., fig. 7.

*? Clathurella maculosa* Pease, Am. Journ. Conch., iii., 1867, p. 219, pl. xv., fig. 16.

*? Clathurella dichroma* Sturany, Pola Exped., 1903, Moll. p. 252, pl. lxxiii., fig. 5.

The type from the "Chevert" collection, an immature shell, has been compared with the specimen from Murray Island figured here. An earlier misidentification of this Australian shell as *P. tessellata* was based on material received from Père Hervier so named. Both colour varieties, that with black and that with orange spots (var. *luteopicta* Hervier), occur in Queensland. A figure of a shell from the Red Sea is so like ours that I venture to include *C. dichroma* as a probable synonym. If *C. maculosa* Pease should prove, as I suspect, to belong here rather than to *C. felina*, as Tryon indexed it, his name would take precedence.

*Hab.* Queensland:—Barnard Island (type); Eclipse Island; Palm Island (Brazier); Mast Head Island; Murray Island (specimen here figured, self); Facing Island (Kesteven).

PSEUDODAPHNELLA CANISTRA *sp. nov.*

(Plate lv., fig. 179.)

Shell subulate, rather solid. Adult whorls seven. Colour irregularly disposed; on a ground of buff are broad white vertical stripes, a few narrow distant chestnut stripes, and a narrow white peripheral belt. Spiral cords eighteen, radial riblets twenty-two. Aperture:—Within the outer lip are ten small and short plications. Length 10 mm., breadth 3 mm.

Compared with a specimen from Karachi, labelled by its author *Clathurella camacina*,[102] this differs by larger size, more slender shape, and coarser sculpture. A more distant relation is *P. felina* Hinds. These can be grouped in a sub-genus *Kermia* Oliver, of which *Clathrina* Melvill is an equivalent.

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (type, self); Barney Point; Port Curtis (Kesteven).

PSEUDODAPHNELLA CRASSELIRATA *Hervier.*

(Plate lv., fig. 180.)

*Clathurella albofuniculata* var. *crasselirata* Hervier, Journ. de Conch., xliv., 1897, p. 139, and 1898, p. 92.

*Clathurella tincta* var. *crasselirata* Bouge and Dautzenberg, Journ. de Conch., lxi., 1913 (1914), p. 207.

In view of the confusion that surrounds *Pleurotoma albifuniculata* Reeve, I have preferred to use Hervier's name in a specific sense, a value to which that writer was himself inclined. The example figured is from Torres Strait, and is named by comparison with Hervier's specimens.

*Hab.* Queensland:—Murray Island; 4 to 14 fathoms, Albany Passage (self).

PSEUDODAPHNELLA EPISEMA *Melvill* and *Standen.*

*Clathurella episema* Melvill and Standen, Journ. of Conch., viii., Nov. 1896, p. 294, pl. x., fig. 38. *Id.* Bouge and Dautzenberg, Journ. de Conch., xli., 1913 (1914), p. 196.

*Clathurella euzonata* Hervier, Journ. de Conch., xliv., April 1897, p. 143, and xlv., 1898, p. 102, pl. ii., fig. 6. *Id.* Tomlin, Journ. of Conch., xiii., 1910, p. 43.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island; Lizard Island (self).

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[102] Melvill—Mem. Manchester Lit. Phil. Soc., xlii., 1898, No. 4, p. 13, pl. i., fig. 15.

PSEUDODAPHNELLA DAEDALA *Reeve.*

*Pleurotoma daedala* Reeve, Proc. Zool. Soc., 1846, p. 6. *Id.* Conch. Icon., 1846, pl. xxxviii., fig. 355.

*Clathurella daedala* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 155.

The "Chevert" specimens are 10 mm. long. I doubt if they are correctly determined, but am unable to check this nomenclature.

*Hab.* Queensland:—30 fathoms, Darnley Island (Brazier).

PSEUDODAPHNELLA HARENULA *sp. nov.*

(Plate lv., fig. 181.)

Shell small, solid, ovate-fusiform, rather turreted and constricted at the base. Colour white, the protoconch buff; on the upper whorls an orange line runs along the second spiral below the angle; on the last whorl such lines follow the third, seventh, and tenth spirals; on the back of the last whorl there may be an irregular orange blotch. Whorls seven, of which three and a half compose the protoconch. Sculpture:—A sub-sutural space representing the fasciole is smooth save for radial wrinkles; the radial ribs are perpendicular and discontinuous, absent on base and fasciole, set at about fourteen to a whorl, and chiefly discernible as knots on the spirals; on the last whorl the spirals amount to fifteen, on the penultimate to six, and on the antepenultimate to four sharp elevated cords. Aperture:—The varix is moderately prominent, and mounts considerably on the penultimate; the inner edge of the lip is beset with ten small crowded denticules; the sinus is spout shaped, constricted at its entrance; the columella terminates anteriorly, and within is a small but distinct tooth. Length 4 mm., breadth 1·7 mm.

This is nearly related to *P. thespesia* Melvill and Standen, but has a whorl less, is smaller, and has stronger, more elevated spirals, which predominate over the radials.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (type); 5 to 10 fathoms, Hope Island (self).

PSEUDODAPHNELLA MAYANA *sp. nov.*

(Plate lv., fig. 182.)

Shell small, lanceolate, subturreted, and rather thin. Colour uniform white or uniform cinnamon, or white spotted with cinnamon. Whorls six, including a two-whorled protoconch. Sculpture:—Variable, according as extra threads are or are not intercalated; radials extending from suture to base and traversing the basal furrow, narrow, discontinuous from whorl to whorl, perpendicular, twelve to fourteen to a whorl; spirals from eleven to fifteen, according to presence or absence of intercalated threads; on the snout six or seven close and knotted threads, then a wide basal furrow followed by from five to eight fine threads which by intersection with the

radials on the peripheral area enclose large meshes; on the upper whorls are from two to four spirals. Aperture open and toothless; varix much thicker than the ribs; sinus very small; canal short and open. Length 6 mm., breadth 2 mm.

In size and general appearance this is like *P. modesta*, for which it has been mistaken.[103] *P. mayana* is a slightly narrower shell, with more numerous and much more slender spirals and radials. Where an interstitial thread has not interfered, the basal furrow of *mayana* is a ready recognition mark. *P. modesta* does not occur in Tasmania. Compared with *P. tincta* the Tasmanian shell is smaller, slighter, thinner, and more delicately sculptured.

*Hab.* Tasmania:—Frederick Henry Bay (May).

PSEUDODAPHNELLA MODESTA *Angas.*

(Plate lv., fig. 183.)

*Clathurella modesta* Angas, Proc. Zool. Soc., 1877, p. 38, pl. v., fig. 16. *Id.* Sowerby, Proc. Malac. Soc., ii., 1896, p. 28. *Id.* Pritchard and Gatliff, Proc. Roy. Soc. Vict., xii., 1900, p. 176. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 310.

As is frequently the case in this genus, this species has a light and a dark colour dimorphism. A brown specimen in the British Museum, presented by G. F. Angas, is marked there as the type.

*Hab.* N. S. Wales:—Port Jackson (type, Brazier); 100 fathoms, off Port Macquarie; Wreck Bay; Twofold Bay (self). Victoria:—Port Phillip; Western Port (Pritchard and Gatliff). South Australia:—40 fathoms, Beachport; St. Vincent Gulf; Venus Bay; St. Francis Island (Verco).

PSEUDODAPHNELLA OLIGOINA *sp. nov.*

(Plate lv., fig. 184.)

Shell of medium size, rather thin, lanceolate, turreted, with sloping shoulder, perpendicular periphery, and excavate base. Colour uniform pale buff. Whorls seven, including a two-whorled protoconch. Sculpture:—Radials discontinuous from whorl to whorl, feeble and oblique on the shoulder, prominent and perpendicular on the peripheral area, and traversing the basal excavation, widely spaced, ten on the last whorl; spirals slighter than the radials; on the fasciole area of the last whorl are three faint and narrow threads; from the shoulder to the basal angle are five cords, which over-ride the ribs and thus enclose a series of oblong and nearly uniform meshes; on the snout are six crowded and progressively diminishing beaded spirals; the upper whorls carry four spirals; within the meshes are fine radial striæ; the basal furrow is spaced as if a spiral

[103] Tate and May—Proc. Linn. Soc. N.S.W., xxvi., 1901, p. 370.

of regular sequence to the rest were omitted. Aperture unusually wide; varix prominent, more massive than the ribs; sinus shallow; canal bent, short, and open. Length 7 mm., breadth 3 mm.

This species has a general resemblance to *P. spelæodea* Hervier, from New Caledonia, but is smaller, thinner, less cylindrical, and with fewer radials and spirals, resulting in larger meshes in the sculpture.

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (type, self).

PSEUDODAPHNELLA PHILIPPINENSIS *Reeve.*

(Plate lv., fig. 185.)

*Pleurotoma philippinensis* Reeve, Proc. Zool. Soc., 1843, p. 184, and Conch. Icon., i., 1843, pl. xiii., fig. 109.

*Mangilia philippinensis* Melvill and Standen, Journ. of Conch., viii., 1895, p. 94.

*Pseudodaphnella philippinensis* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 59.

*Clathurella philippinensis* Hervier, Journ. de Conch., xliv., 1897, p. 138, and xlv., 1898, p. 89. *Id.* Hidalgo, Revist. Acad. Madrid, i., 1904, p. 342. *Id.* Couturier, Journ. de Conch., lv., 1907, p. 13. *Id.* Schepman, Siboga Exped. Monogr., xlixe., 1913, p. 438. *Id.* Bouge and Dautzenberg, Journ. de Conch. lxi., 1904, p. 200.

This species is the type of the genus *Pseudodaphnella.* Hervier has already noticed that it is subject to considerable variation in size, disposition of colour, number of radial ribs, and density of spiral cords. On the last whorl of an example from Cape Grenville I counted thirty-four spirals. The apex (Pl. lv., fig. 185) of a shell I gathered alive at Murray Island is small, brown, and of two whorls, the first finely spirally grooved, the second with numerous close fine radial riblets.

*Hab.* Queensland:—13 fathoms, Cape Grenville (Brazier); Murray Island; Palm Island; Eagle Island; Lizard Island; Three Isles and Two Isles, off Cape Flattery (self).

PSEUDODAPHNELLA PUNCTIFERA *Garrett.*

*Clathurella punctifera* Garrett, Proc. Acad. Nat. Sci. Philad., 1873, p. 222, pl. ii., fig 2. *Id.* Tryon, Man. Conch., vi., 1884, p. 293, pl. xix., fig. 74. *Id.* Bouge and Dautzenberg, Journ. de Conch, lxi., 1913 (1914), p. 201.

*Mangilia chrysolitha* Melvill and Standen, Journ. of Conch., viii., 1896, p. 286, pl. ix., fig. 25, and 1897, p. 400.

Upon the assurance of Tryon that the figure of *C. punctifera* is defective, I follow Bouge and Dautzenberg in giving it precedence over *M. chrysolitha.* According to the figure of *P. pustulosum*,[104] that species

[104] de Folin—Les Meleagrinicoles, 1867, p. 56, pl. v., fig. 14.

seems to be more slender, with more whorls and with closer and finer spirals anteriorly. *Clathurella rufinodis* von Martens, 1880, is much larger and comparatively broader.

*Hab.* Queensland:—Murray Island (self).

PSEUDODAPHNELLA PUNICEA *sp. nov.*

(Plate lv., fig. 186.)

Shell small, solid, ovate-lanceolate, acuminate. Whorls seven, including a two-whorled protoconch. Colour uniform lilac. Sculpture:—Stout perpendicular ribs extending from the shoulder to the base are set at thirteen to a whorl, about their own breadth apart; the spirals are three or four on the upper whorls, and nine on the last; a bead occurs where a spiral intersects a rib, and on the snout, where the radials do not otherwise appear, the small close spirals are still beaded. Aperture wide; varix massive; four denticules within the outer lip. Length 5·5 mm., breadth 2·5 mm.

This species also extends to New Caledonia, whence it has been reported by several writers[105] as *Clathurella blanfordi* Nevill. But that African species is shown by Nevill's original figure[106] to possess a basal furrow double the breadth of that of the Australian shell.

*Hab.* Queensland:—Palm Islands (type); Two Isles and Rocky Isle, off Cape Flattery (self).

PSEUDODAPHNELLA PUSTULATA *Angas.*

(Plate lvi., fig. 187.)

*Clathurella pustulata* Angas, Proc. Zool. Soc., 1877, p. 38, pl. v., fig. 14 (not *Pleurotoma pustulosum* de Folin, 1867).

In the British Museum one specimen from Port Jackson, presented by G. F. Angas, is marked as the type.

*Hab.* N. S. Wales:—Port Jackson (Brazier).

PSEUDODAPHNELLA RAMSAYI *Brazier.*

(Plate lvi., fig. 188.)

*Clathurella ramsayi* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 157. *Id.* Hedley, Rec. Austr. Mus., iv., 1901, p. 122.

A peculiar wide basal furrow groups *P. ramsayi* with such species as *P. alba* Deshayes, *blanfordi* Nevill, *cavernosa* Reeve, *leuckarti* Dunker, *mayana* Hedley, *oligoina* Hedley, *spelæodea* Hervier, *stipata* Hedley, and *tincta* Reeve.

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[105] Bouge and Dautzenberg—Journ. de Conch., lxi., 1913 (1914), p. 192.

[106] Nevill—Journ. Asiat. Soc. Bengal, xliv., 1875, pl. vii., fig. 14.

Because its label had been left blank this species was formerly reported as missing from the "Chevert" collection, but on a second and closer examination a type label was found concealed in the bottom of the box enclosing the specimen. By aid of the type thus recovered, and now figured, I can trace this Papuan species along the Queensland coast. Australian specimens are a little larger and slightly different in colour, and as the original description is rather brief, I add a description of the shells from Lady Elliot Island.

Shell small, glossy, rather solid, subcylindrical, and constricted at the base. Colour white, with two narrow orange-brown zones, the first immediately below the suture and ascending the upper whorls, the second running above the basal furrow and ending on the varix. Sculpture:—The ribs are continuous and perpendicular, set eleven to a whorl, wider than their breadth apart; the spirals are four on the upper whorls, and nine on the last; of these two small coloured threads run close together beneath the suture, and are followed by three thick wide-spaced uncoloured cords on the periphery, then by a coloured cord of equal calibre; below that is a massive spiral, and lastly two small bead rows set close together on the extremity of the snout; the meshes on the periphery are rather deep, oblong, and translucent. Aperture wide; varix prominent, and much larger than the ribs; within the outer lip are four small denticules; sinus small; canal short and broad. Length 6·3 mm., breadth 3 mm.

*Hab.* New Guinea:—4 fathoms, Katow (type, "Chevert"). Queensland:—Lady Elliot Island (Miss Lovell); Facing Island, Port Curtis (Kesteven). Western Australia:—Cottesloe (Henn).

### Pseudodaphnella retellaria *sp. nov.*

(Plate lvi., fig. 189.)

*Clathurella languida* Brazier, Proc. Linn. Soc. N.S.W., i., 1876, p. 154 (not *Pleurotoma languida* Reeve, Conch. Icon., i., 1845, pl. xxix., fig. 257).

Shell small, lanceolate, subturreted, thin. Colour dull white, with a few brown spots on the shoulder, and the apex brown. Whorls eight, including a protoconch of three and a half whorls. Sculpture harsher on the earlier whorls; radials narrow, almost lamellate, ending abruptly at the shoulder and gradually on the base, slightly oblique, widely spaced, on the last whorl fourteen and on the penultimate sixteen; these are crossed by spiral threads of smaller gauge, forming long narrow meshes, amounting to sixteen on the last whorl and to six on the penultimate; fasciole flat, only incised by crescentic growth lines. Aperture ovate; outer lip forming a small varix, ascending the previous whorl and enclosing a C-shaped sinus; lip dentate at the margin and tuberculate within; canal short and wide. Length 6 mm., breadth 2·3 mm.

From *P. melanoxytum* Hervier this differs by larger size, more slender form, and by a sculpture composed of threads rather than beads.

*Hab.* Queensland:—15 fathoms, Palm Island (type); 5 to 8 fathoms, Murray Island (self); 20 fathoms, Darnley Island (Brazier).

PSEUDODAPHNELLA RUFOZONATA *Angas.*

(Plate lvi., fig. 190.)

*Clathurella rufozonata* Angas, Proc. Zool. Soc., 1877, p. 38, pl. v., fig. 13. *Id. op. cit.*, 1880, p. 415. *Id.* Verco, Trans. Roy. Soc. S.A., xxxiii., 1909, p. 311.

In the British Museum are six shells from Port Jackson, presented by G. F. Angas, and marked as the types of this species. The colour markings are irregularly disposed, or may be absent.

By G. B. Sowerby[107] this species was united to *P. tincta* Reeve, and to *P. albifuniculata* Reeve, an arrangement copied by Pritchard and Gatliff.[108] But *P. rufozonata* is only two-thirds the height of *tincta*, is of a more slender build, and lacks the peculiar excavate base of that tropical species. The latter feature is shown in Reeve's figure, and is mentioned by Hervier[109] as the "depression circulaire autour de son canal basal." The records by Melvill and Standen[110] and by Bouge and Dautzenberg[111] of *rufozonata*, from the Loyalty Islands, are doubtless due to the confusion between this and *P. tincta*. *P. rufozonata* is indeed more nearly related to *albifuniculata* Reeve, but is smaller, more fusiform, and has the radials more prominent owing to the spirals being slighter. A more distant relation is *P. barnardi*, easily separable by the heavier sculpture and striking colour pattern.

*Hab.* N. S. Wales:—Bottle and Glass Rocks, Port Jackson (type, Brazier); Catherine Hill Bay (Cherry).

Var. TRACHYS *Tenison-Woods.*

*Mangelia trachys* Tenison-Woods, Trans. Roy. Soc. Vict., xiv., 1878, p. 57.

This western form seems to be slightly larger and to be more highly coloured than the typical eastern *rufozonata*, so the name of Tenison-Woods may serve to express a geographical race.

*Hab.* Victoria:—Brighton (type, Melbourne Museum); Western Port and Polwarth (Pritchard and Gatliff). South Australia:—Hardwick Bay (Matthews).

Var. NODORETE *May.*

*Clathurella nodorete* May, Proc. Roy. Soc. Tasm., 1915, p. 84, pl. i., fig. 4.

This southern form differs slightly by a rather larger protoconch, and by less prominent sculpture.

*Hab.* Tasmania:—80 fathoms, Schouten Island (type, May).

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[107] Sowerby—Proc. Malac. Soc., ii., 1896, p. 28.
[108] Pritchard and Gatliff—Proc. Roy. Soc. Vict., xii., 1900, p. 176.
[109] Hervier—Journ. de Conch., xlv., 1897, p. 92.
[110] Melvill and Standen—Journ. of Conch., viii., 1897, p. 403.
[111] Bouge and Dautzenberg—Journ. de Conch., lxi., 1914, p. 204.

PSEUDODAPHNELLA STIPATA *sp. nov.*

(Plate lvi., fig. 191.)

Shell small, solid, broad in proportion to length. Adult whorls about four. Sculpture:—The radials are prominent spaced ribs, set about ten to a whorl; the spirals are strong cords, two on the antepenultimate, three on the penultimate, and seven on the last whorl; on the latter the third spiral from the suture runs into the top of the varix, between the fourth and the fifth is a wide gap, and the last three are tubercular and traverse the snout. Aperture:—The varix is very thick and prominent; the sinus is small and shallow. Length 4 mm., breadth 2 mm.

This sturdy little species is somewhat like *Pleurotoma alba*,[112] but is shorter, comparatively stouter, with fewer but more prominent cinguli. In the hollow of the base a spiral is missing, producing the effect of a broad furrow interrupted by the radials, as in *P. spelæodea* Hervier and *P. tincta* Reeve. The only three specimens that I dredged are dead and faded, so that details of colour and apex are not available.

*Hab.* Queensland:—4 to 14 fathoms, Albany Passage (type, self).

PSEUDODAPHNELLA TESSELLATA *Hinds.*

(Plate lvi., figs. 192-193.)

*Clavatula tessellata* Hinds, Proc. Zool. Soc., 1843, p. 44, and Zool. "Sulphur," ii., 1844, p. 23, pl. vii., fig. 17 (not *Pleurotoma tessellata* Reeve, Conch. Icon., i., 1845, pl. xxvii., fig. 244, err. on pl. "344"; nor *Pleurotoma tessellata* Reeve. Conch. Icon., i., 1846, pl. xxxvi., fig. 331=*P. formosa* Reeve; nor *P. tessellata* of subsequent authors).

*Pleurotoma forbesii* and *Pleurotoma apicalis* Montrouzier, Journ. de Conch., ix., 1861, p. 277, pl. xi., fig. 6.

*Clathurella apicalis* Hervier, Journ. de Conch., xliv., 1896, p. 143. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 192.

*? Defrancia mauritiana* Sowerby, Proc. Zool. Soc., 1893, p. 491, pl. xxxviii., figs. 23, 24.

This species appears to have suffered general neglect, and its name to have been misappropriated. The above figure is from a specimen that I collected in Torres Strait.

*Hab.* Queensland:—Murray Island; Palm Island (self).

[112] Deshayes—Moll. de Reunion, 1863, p. 110, pl. xii., figs. 17, 18.

PSEUDODAPHNELLA TINCTA *Reeve.*

*Pleurotoma tincta* Reeve, Conch. Icon., i., 1846, pl. xxxviii., fig. 347, and Proc. Zool. Soc., 1846, p. 5.

*Clathurella tincta* Pease, Am. Journ. Conch., iv., 1868, p. 105. *Id.* Langkavel, Donum Bismarckianum, 1871, p. 1. *Id.* Tryon, Man. Conch., vi., 1884, p. 292, pl. xvi., fig. 76. *Id.* Melvill and Standen, Journ. of Conch., xviii., 1897, p. 403. *Id.* Hervier, Journ. de Conch., xliv., 1897, p. 138, and xlv., 1898, p. 90. *Id.* Sturany, Pola Exped., 1903, Moll. p. 251, pl. vii., fig. 1. *Id.* Hedley, Proc. Linn. Soc. N.S.W., xxxii., 1907, p. 484. *Id.* Bouge and Dautzenberg, Journ. de Conch., lxi., 1914, p. 206. *Id.* Melvill and Standen, Proc. Zool. Soc., 1901, p. 466.

*Clathurina tincta* Melvill, Proc. Malac. Soc., xii., 1917, p. 188.

*Defrancia corrugata* Schmeltz *(nom. nud.)*, Mus. Godeffroy, Cat., iv., 1869, p. 90.

*Clathurella corrugata* Dunker, Malak. Blatt., xviii., 1871, p. 159, *fide* Garrett in Tryon.

*Clathurella rubroguttata* H. Adams, Proc. Zool. Soc., 1872, p. 14, pl. iii., fig. 25. *Id.* Thurston, Madras Museum Bulletin, iii., 1895, p. 122.

*Clathurella centrosa* Pilsbry, Proc. Acad. Nat. Sci. Philad., 1904, p. 11, pl. i., fig. 6.

The type of *C. rubroguttata* from the Hargraves collection is preserved in the Australian Museum. It seems to me to be the typical form of *P. tincta*. Perhaps a smaller more closely latticed form that occurs also on the Australian coast may be distinguished as var. *corrugata*.

*Hab.* Queensland:—5 to 10 fathoms, Hope Island; Two Isles, off Cape Flattery; Lizard Island; Murray Island; Mapoon; Mornington Island (self).

EUCYCLOTOMA *Boettger.*

*Eucyclotoma* Boettger, Nachr. Malak. Gesell., xxvii., 1895, p. 55. Type *Daphnella fusiformis*.

From *Daphnella* this genus is distinguished by a spirally striated nucleus. On the adult whorls the spiral sculpture developes into prominent keels. Its members are chiefly associated with a coral reef fauna.

Besides the type the founder included in his genus *Pleurotoma tricarinata* Kiener and *Clathurella bicarinata* Pease. Addition of the following is now suggested:—*Pleurotoma lactea* Reeve, *P. hindsii* Reeve, *P. inquinata* Reeve, *P. carinulata* Souverbie, *Daphnella varicifera* Pease, and *D. trivaricosa* von Martens.

EUCYCLOTOMA CARINULATA *Souverbie.*

*Pleurotoma carinulata* Souverbie, Journ. de Conch., xxiii., 1875, p. 289, pl. xiii., fig. 6. *Id.* Boettger, Nachr. Malak. Gesell., 1895, p. 62.

From the figure this species seems related to *fusiformis* Garrett and *varicifer* Pease. Hitherto it has only been recorded from New Caledonia.

*Hab.* Queensland:—Murray Island; Two Isles, off Cape Flattery; Palm Island; 17 to 20 fathoms, Mast Head Island (self); Eclipse Island (Brazier). N. S. Wales:—Norah Head (Hargraves Collection).

EUCYCLOTOMA EXILIS *Dunker.*

*Purpura (Polytropa) exilis* Dunker, Mal. Blatt., xviii., 1871, p. 154. *Id.* Tryon, Man. Conch., vi., 1884, p. 289.

*Pleurotoma tricarinata* Reeve, Conch. Icon., i., 1843, pl. xv., fig. 12 (not *Pleurotoma tricarinata* Kiener).

*Clathurella pulcherrima* H. Adams, Proc. Zool. Soc., 1872, p. 12, pl. iii., fig. 26.

*Hab.* Queensland:—5 fathoms, Murray Island (self).

EUCYCLOTOMA NOBILIS *sp. nov.*

(Plate lvi., figs. 194, 195.)

Shell large for the genus, lanceolate, rather solid. Colour crystalline white, splashed irregularly with orange buff; nucleus buff. Besides a two-whorled mucronate nucleus there are about seven whorls which wind obliquely and are girt with solid projecting keels. The turreted spire is a little longer than the last whorl. Sculpture:—On the last whorl are four nearly equal girdles; the second and fourth diminish as they ascend, and vanish in a thread two whorls above; the keel forming the basal angle just emerges above the suture on the upper whorls; close set perpendicular riblets bead the keels at the point of intersection, and their interstices are again traversed by smaller spiral threads; on the snout are half-a-dozen spirals; one specimen has a perfect varix half a whorl behind the mouth; the nucleus has close spiral threads reticulated by finer radials. Aperture:—Outer lip flared, its edge deutate by the girdle ends, and roughened by intermediate wrinkles; sinus subsutural, ovate, contracted at the entrance; canal short and bent; columella excavate above and twisted below; inner lip represented by a thin film of callus. Length 16 mm., breadth 7 mm.

This comes nearest to *E. bicarinata*,[113] from the Gilbert Archipelago, but our shell at a corresponding length has three keels instead of two,

[113] Pease—Am. Journ. Conch., iii., 1867, p. 222, pl. xv., fig. 23.

and less sloping shoulders. Some young shells which I dredged in Torres Straits I suppose, but not with confidence, to be the same species as that from the Coral Sea.

*Hab.* Bird Islet, Wreck Reef; Coral Sea, lat. 22.10 S., long. 155.28 E. (type, Australian Museum). Queensland:— 4 to 14 fathoms, Albany Passage; 5 to 8 fathoms, Murray Island (self).

### Daphnellopsis *Schepman.*

*Daphnellopsis* Schepman, Siboga Exped. Monogr., xlixe., 1913, p. 449. Type *D. lamellosa* Schepman, *op. cit.*

The unusual contour of an expanded peristome and varix renders this genus noticeable, and easily distinguishable from others of the Turridæ. Probably *Clathurella obesa*[114] should be here included.

### Daphnellopsis murex *sp. nov.*

(Plate lvi., figs. 196, 197, 198.)

Shell small, rather thin, ovate-fusiform. Colour of dead specimen uniform dull white. Including the protoconch the whorls are four. Protoconch involute, small, obliquely tilted, finely spirally grooved. Sculpture:— Radial riblets cross the full breadth of the whorl, above sharp and more closely set, on last whorl fainter, lower, and wider; about fifteen to a whorl; varices irregular, two on the last and one on the penultimate whorl, lamellate, expanded, and having a general resemblance to those of *Murex triformis*; the spiral threads are about twenty on the last whorl, and about eight on the penultimate; fasciole indeterminate. Aperture:—Mouth elliptical; sinus subtubular; canal moderately produced, slightly bent, and nearly closed. Length 5·5 mm., breadth 2 mm.

*Hab.* Queensland:—5 to 8 fathoms, Murray Island (type, self).

### Teleochilus *Harris.*

*Teleochilus* Harris, Cat. Tert. Moll. Brit. Mus., i., 1897, p. 64. Type *Daphnella gracillima* Tenison-Woods. *Id.* Tate, Journ. Roy. Soc. N.S.W., xxxi., 1897, p. 393. *Id.* Cossman, Essai Pal. Comp., iii., 1899, p. 191, and vii., 1906, p. 224. *Id.* Dall, Proc. U.S. Nat. Mus., liv., 1918, p. 332.

The genotype is a Tertiary fossil from Tasmania and Victoria, and the genus is hitherto unknown as recent. Several writers have expressed doubts whether *Teleochilus* may be properly included in the Turridæ. My own suggestion is that it may be a toothless member of the Acteonidæ near *Bullinula*.

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[114] Garrett—Proc. Acad. Nat. Sci. Philad., 1873, p. 221, pl. ii., fig. 36.

TELEOCHILUS BICONICUM *Hedley.*

(Figure 14.)

*Bathytoma biconica* Hedley, Mem. Austr. Mus., iv., 1903, p. 385, fig. 98.

*Hab.* N. S. Wales:—20 fathoms, Shoalhaven Bight ("Thetis").

Fig. 14

TELEOCHILUS SARCINULUM *Hedley.*

(Figure 15.)

*Bathytoma sarcinula* Hedley, Rec. Austr. Mus., vi., 1905, p. 53, fig. 21.

*Hab.* N. S. Wales:—111 fathoms, Cape Byron (type, Halligan). Tasmania:—Bass Straits (Gatliff).

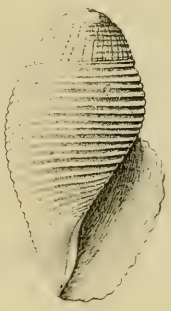

Fig. 15.

## NEW NAMES ARE PROPOSED IN THIS PUBLICATION AS FOLLOWS:

### Generic and Subgeneric.

*Acrista*, *Anacithara*, *Asperdaphne*, *Filodrillia*, *Heterocithara*, *Leiocithara*, *Marita*, *Mitrithara*, *Scrinium*, *Splendrillia*, *Turridrupa*.

### Specific and Subspecific.

*Anacithara brevicostata*, *cœlatura*, *exquisita*, *hebes*, *hervieri*, *leptalea*, *propinqua*, *rissoina*, *robusta*, *stricta*, *tumida*.

*Asperdaphne amplecta*, *bela*, *capricornea*, *compacta*.

*Asthenotoma cicatrigula*, *steira*.

*Austrodrillia ravitensis*.

*Clavus æneus*, *candidulus*, *costatus*.

*Daphnella cestrum*, *cheverti*, *granata*, *sigmastoma*.

*Daphnellopsis murex*.

*Epideira gabensis*, *torquata*.

*Etrema acricula*, *capillata*, *catapasta*, *culmen*, *curtisiana*, *elegans*, *firma*, *labiosa*, *orirufa*, *polydesma*, *ravella*, *sparula*, *tortilabia*.

*Eucithara alacris*, *arenivaga*, *brocha*, *minutalia*, *monochoria*, *moraria*, *miriamica*, *phyllidis*.

*Eucyclotoma nobilis*.

*Filodrillia columnaria*, *mucronata*, *ornata*, *stadialis*.

*Gemmula hombroni*.

*Guraleus costatus*, *costatus wilesianus*, *fascinus*, *fascinus stephensii*, *morologus*, *nitidus*, *permutatus*.

*Hemilienardia hersilia*, *homochroa*.

*Heterocithara concinna*, *erismata*, *seriola*, *transenna*.

*Inquisitor coriorudis*, *fibratus*, *flindersianus*, *formidabilis*, *granobalteatus*, *lucertosus*, *lassulus*, *petilinus*, *spurius*.

*Lienardia corticea*, *fallaciosa*, *farsilis*, *falsaria*, *gracilis*, *periscelina*, *punctilla*, *ralla*, *rosella*.

*Macteola segesta cinctura*.

*Melatoma eburnea*, *dampieria*, *duplaris*, *lygdina*, *spadicina*.

*Mitrithara columnaria*, *proles*.

*Nepotilla tropicalis*.

*Paraclathurella aditicola*, *clothonis*.

*Pseudodaphnella attenuata*, *canistra*, *harenula*, *mayana*, *oligoina*, *punicea*, *retellaria*, *stipata*.

*Pseudoraphitoma axicula, bipyramidata, crudelis, informis, styracina, transitans.*

*Scrinium furtivum.*

*Turridrupa deceptrix, pertinax.*

*Veprecula scala, vacillata, vacillata paucicostata.*

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## ADDENDA AND CORRIGENDA.

Page 221, line 41—for *parabolo* read *parabola.*

Page 225, line 18—Lieut.-Colonel A. J. Peile has lately published (Proc. Malac. Soc., xv., 1922, pp. 18, 19, fig. 1) a new figure of the radula of *Columbarium.* He withdraws this genus from the Turridæ and refers it to the Rachiglossa near the Muricidæ. He also unites *C. pagodoides* Watson to *C. spinicincta* Watson.

Page 225, line 37—The date of *Fusus pagodoides* is not 1881, but June 12th, 1882.

Page 231, line 18—For XANTHOPHÆS read XANTHOPHAES.

Page 244—Delete lines 8 to 10. This figure is from the type.

Page 249, line 27—For SUBLICATA read SUBPLICATA.

Page 255, line 22—For *Strombus* read *Strombus lividus.*

EXPLANATION OF PLATE XLII.

Fig. 1. *Turris babylonia* Linne. Woodlark Island. Section to show fluted interior of whorls.

,, 2. *Turris marmorata* Lamarck. Starcke River, Queensland.

,, 3. ,, Apex. Eagle Island, Queensland.

,, 4. *Asthenotoma nivea* Philippi. Operculum. Karachi, India.

,, 5. ,, *cicatrigula* Hedley. Type.

,, 6. ,, *subtilinea* Hedley. Type.

,, 7. *Filodrillia columnaria* Hedley. Type.

,, 8. ,, *mucronata* Hedley. Type.

,, 9. ,, *ornata* Hedley. Type.

,, 10. ,, *stadialis* Hedley. Type.

,, 11. ,, *steira* Hedley. Type.

,, 12. *Turridrupa acutigemmata* Smith. Hope Island, Queensland

,, 13. ,, ,, Apex.

,, 14. ,, *deceptrix* Hedley. Type.

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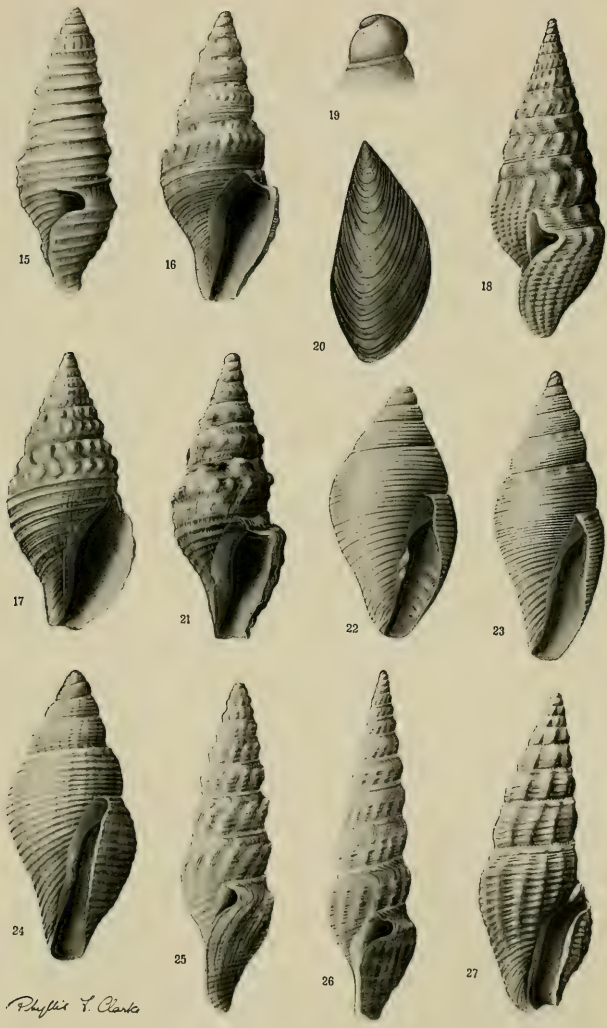
EXPLANATION OF PLATE XLIII.

Fig. 15. *Turridrupa pertinax* Hedley. Type.
,, 16. *Epideira gabensis* Hedley. Type.
,, 17. ,, *philippineri* Tenison-Woods. N. W. Tasmania.
,, 18. ,, *striata* Gray. Port Jackson.
,, 19. ,, ,, Apex.
,, 20. ,, ,, Operculum.
,, 21. ,, *torquata* Hedley. Type.
,, 22. *Mitrithara alba* Petterd. Flinders, Victoria.
,, 23. ,, *columnaria* Hedley. Type.
,, 24. ,, *proles* Hedley. Type.
,, 25. *Inquisitor corioradis* Hedley. Type.
,, 26. ,, *coxi* Angas. Port Jackson.
,, 27. ,, *fibratus* Hedley. Type.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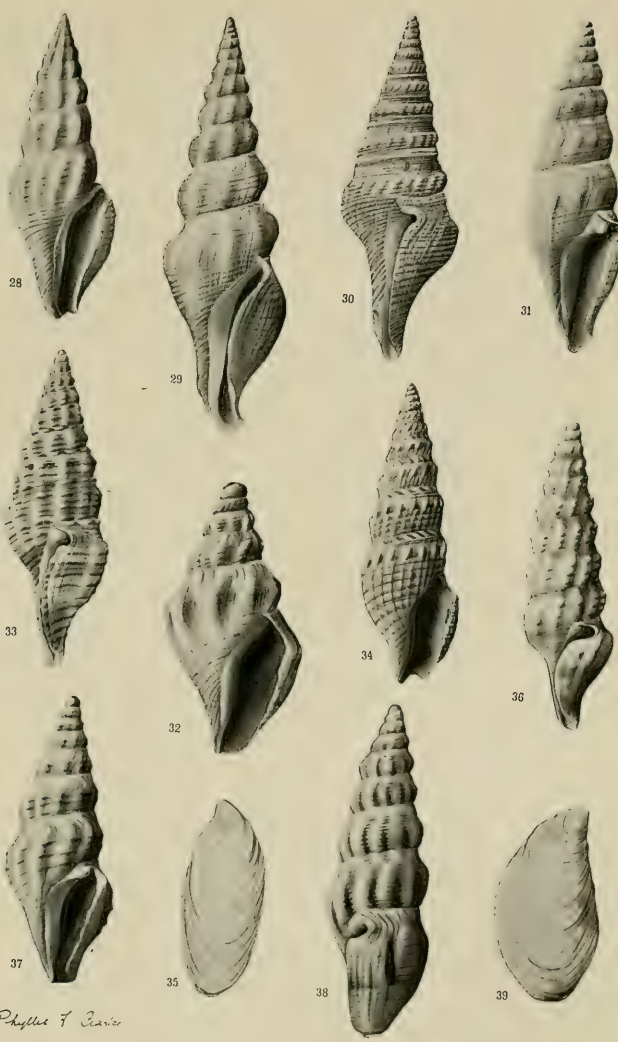
EXPLANATION OF PLATE XLIV.

Fig. 28. *Inquisitor flindersiānus* Hedley. Type.
,, 29. ,, *formidabilis* Hedley. Type.
,, 30. ,, *granobalteus* Hedley. Type.
,, 31. ,, *immaculatus* Tenison-Woods. Western Port, Victoria.
,, 32. ,, *lacertosus* Hedley. Type.
,, 33. ,, *lassulus* Hedley. Type.
,, 34. ,, *metcalfei* Angas. Port Jackson.
,, 35. ,, ,, Operculum.
,, 36. ,, *petilinus* Hedley. Type.
,, 37. ,, *suavis* Smith. Off Cape Three Points, N. S. Wales.
,, 38. *Austrodrillia angasi* Crosse. Port Jackson.
,, 39. ,, ,, Operculum.




Phyllis J. Jarvis

EXPLANATION OF PLATE XLV.

Fig. 40. *Austrodrillia berandiana* Crosse. Port Jackson.

„ 41. *Melatoma dampieria* Hedley. Type.

„ 42. „ *duplaris* Hedley. Type.

„ 43. „ *eburnea* Hedley. Type.

„ 44. „ *lygdina* Hedley. Type.

„ 45. „ *spadicina* Hedley. Type.

„ 46. *Clavus æneus* Hedley. Type.

„ 47. „ *candidulus* Hedley. Type.

„ 48. „ *costatus* Hedley. Type.

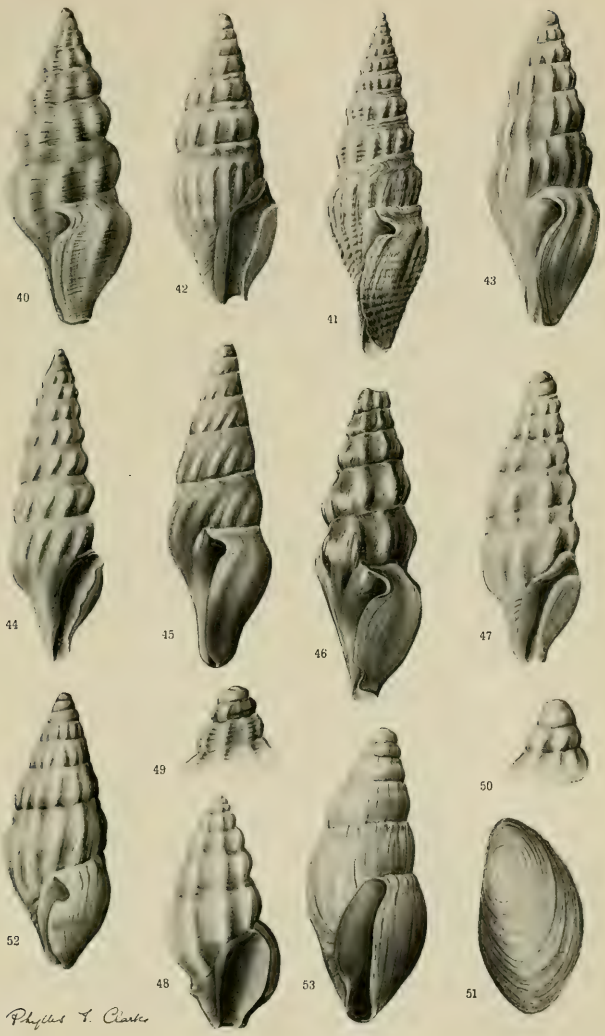
„ 49. „ „ Apex.

„ 50. „ *exasperatus* Reeve. Apex. Hope Island, Queensland.

„ 51. „ *viduus* var. *vidualoides* Garrett. Operculum. Cebu, Philippines.

„ 52. *Iredalea subtropicalis* Oliver. Murray Island, Queensland.

„ 53. *Scrinium furtivum* Hedley. Type.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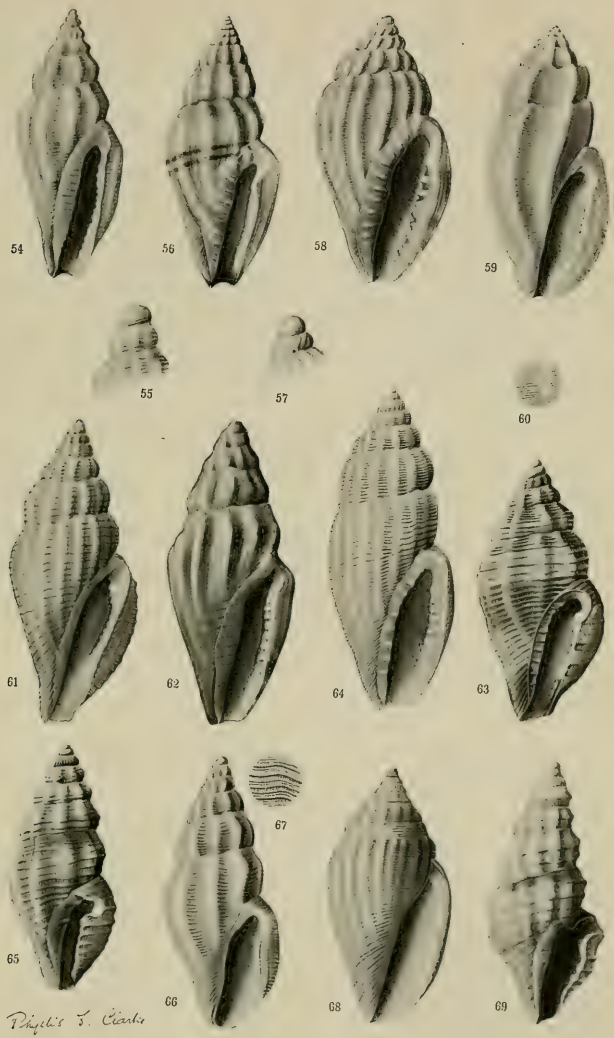
EXPLANATION OF PLATE XLVI.

Fig. 54. *Eucithara alacris* Hedley. Type.
,, 55. ,, ,, Apex.
,, 56. ,, *arenivaga* Hedley. Type.
,, 57. ,, ,, Apex.
,, 58. ,, *brocha* Hedley. Type.
,, 59. ,, *caledonica* Smith. Oubatche, New Caledonia.
,, 60. ,, ,, Detail of sculpture.
,, 61. ,, *gruentheri* Sowerby. Cape Grenville, Queensland.
,, 62. ,, *lyra* Reeve. Annam bar, Queensland.
,, 63. ,, *monochoria* Hedley. Type.
,, 64. ,, *moraria* Hedley. Type.
,, 65. ,, *miriamica* Hedley. Type.
,, 66. ,, *phyllidis* Hedley. Type.
,, 67. ,, ,, Detail of sculpture.
,, 68. ,, *striatissima* Sowerby. Murray Island, Queensland.
,, 69. *Etrema acricula* Hedley. Type.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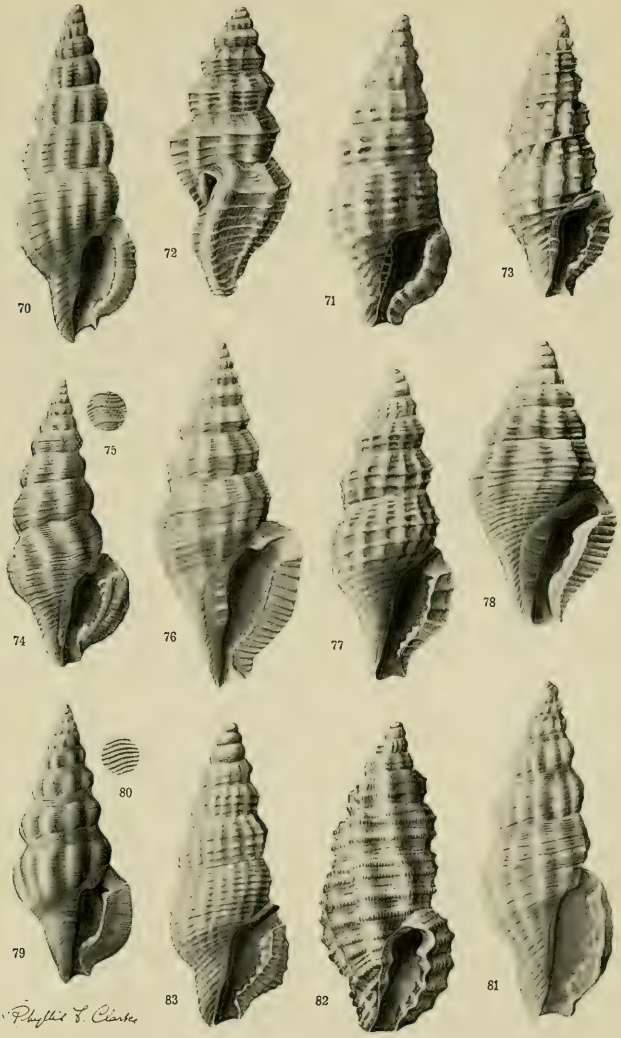
EXPLANATION OF PLATE XLVII.

Fig. 70. *Etrema aliciæ* Melvill and Standen. Lifu, Loyalty Islands.
,, 71. ,, *alphonsiana* Hervier. Lizard Island, Queensland.
,, 72. ,, *capillata* Hedley. Type.
,, 73. ,, *catapasta* Hedley. Type.
,, 74. ,, *culmea* Hedley. Type.
,, 75. ,, ,, Detail of sculpture.
,, 76. ,, *curtisiana* Hedley. Type.
,, 77. ,, *elegans* Hedley. Type.
,, 78. ,, *firma* Hedley. Type.
,, 79. ,, *glabriplicata* Sowerby. Murray Island, Queensland.
,, 80. ,, ,, Detail of sculpture.
,, 81. ,, *nassoides* Reeve. Port Jackson.
,, 82. ,, *orirufa* Hedley. Type.
,, 83. ,, *polydesma* Hedley. Type.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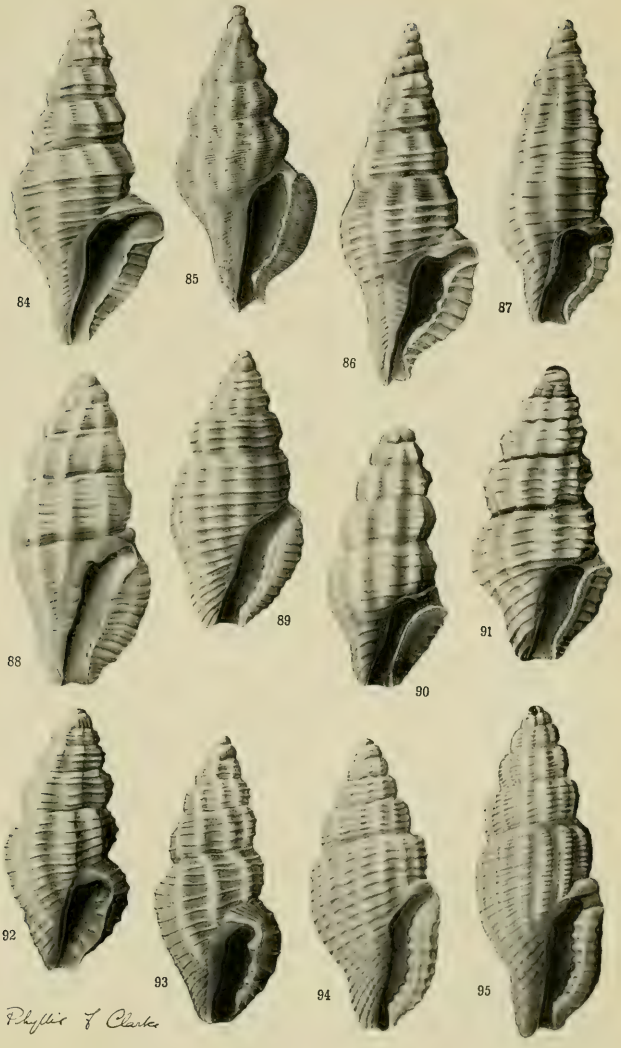
EXPLANATION OF PLATE XLVIII.

Fig. 84. *Etrema ravella* Hedley. Type.
,, 85. ,, *sparula* Hedley. Type.
,, 86. ,, *spurca* Hinds. Cairns, Queensland.
,, 87. ,, *tortilabia* Hedley. Type.
,, 88. *Lienardia falsaria* Hedley. Type.
,, 89. ,, *corticea* Hedley. Type.
,, 90. ,, *fallaciosa* Hedley. Type.
,, 91. ,, *fallax* Nevill. Lifu, Loyalty Islands.
,, 92. ,, *farsilis* Hedley. Type.
,, 93. ,, *gracilis* Hedley. Type.
,, 94. ,, *immaculata* Smith. Norah Head, N. S. Wales.
,, 95. ,, *lutea* Pease. Lizard Island, Queensland.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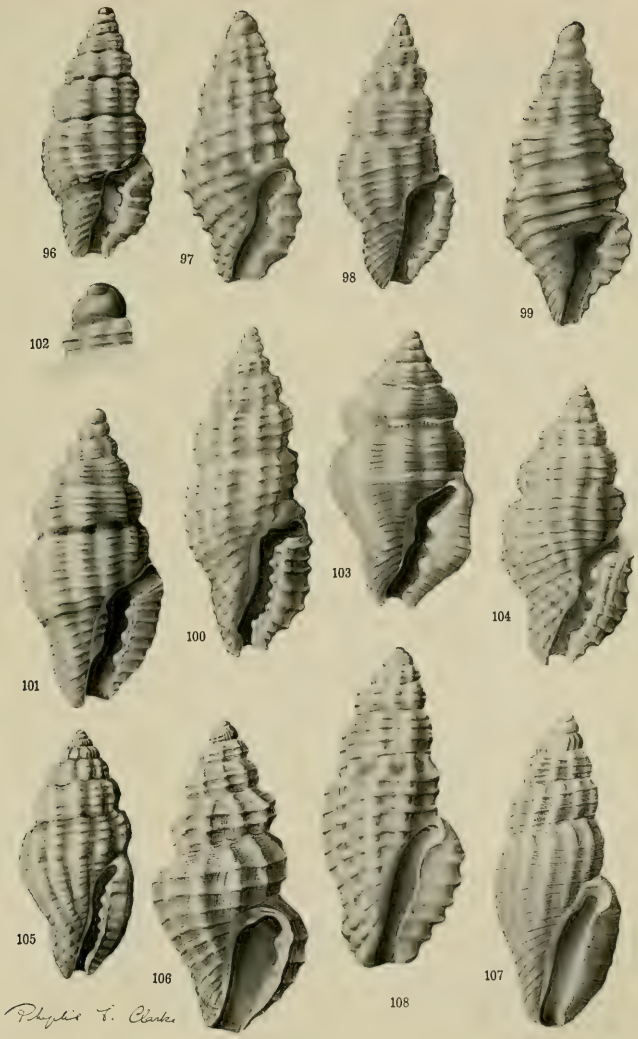
EXPLANATION OF PLATE XLIX.

Fig. 96. *Lienardia mighelsi* Iredale and Tomlin. Tahiti.
,, 97. ,, *multinoda* Hedley. Type.
,, 98. ,, *periscelina* Hedley. Type.
,, 99. ,, *punctilla* Hedley. Type.
,, 100. ,, *ralla* Hedley. Type.
,, 101. ,, *rosella* Hedley. Type.
,, 102. ,, *rubida* Hinds. Apex. Milne Bay, Papua.
,, 103. *Hemilienardia goubini* Hervier. Murray Island, Queensland.
,, 104. ,, *hersilia* Hedley. Type.
,, 105. ,, *homochroa* Hedley. Type.
,, 106. *Heterocithara bilineata* Angas. Port Jackson.
,, 107. ,, *concinna* Hedley. Type.
,, 108. ,, *erismata* Hedley. Type.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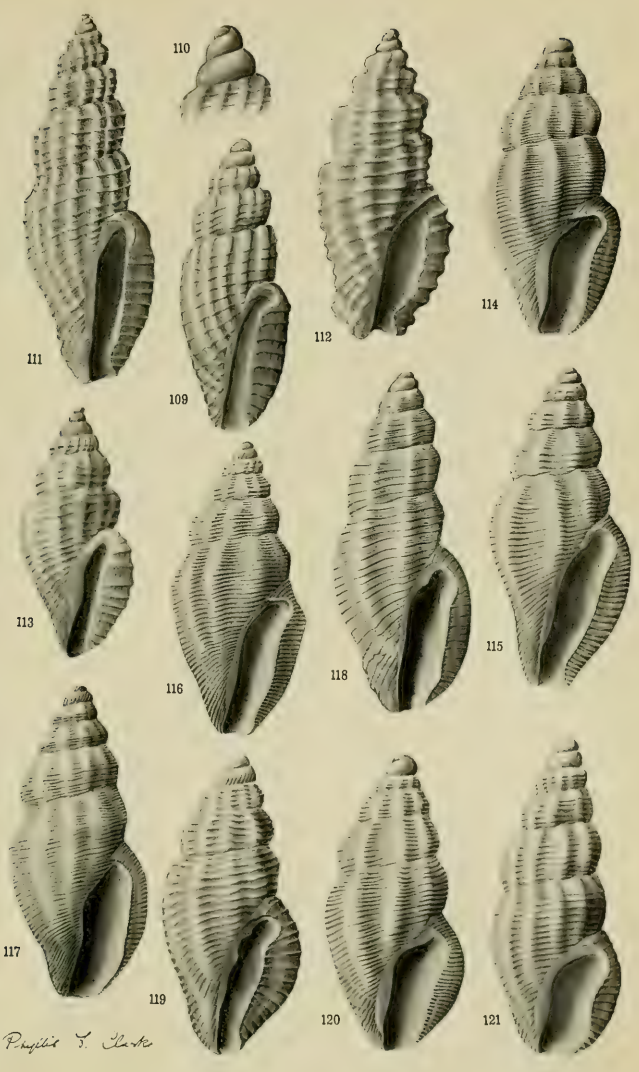
EXPLANATION OF PLATE L.

Fig. 109. *Heterocithara rigorata* Hedley. Endeavour Reef, Queensland.
,, 110. ,, ,, Apex.
,, 111. ,, *seriliola* Hedley. Type.
,, 112. ,, *transenna* Hedley. Type.
,, 113. ,. *zebuensis* Reeve. Hope Island, Queensland.
,, 114. *Anacithara brevicostata* Hedley. Type.
,, 115. ,, *cælatura* Hedley. Type.
,, 116. ,, *exquisita* Hedley. Type.
,, 117. ,, *hebes* Hedley. Type.
,, 118. ,, *hervieri* Hedley. Type.
,, 119. ,, *leptalea* Hedley. Type.
,, 120. ,, *propinqua* Hedley. Type.
,, 121. ,, *rissoina* Hedley. Type.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EXPLANATION OF PLATE LI.

Fig. 122. *Anacithara robusta* Hedley. Type.

,, 123. ,, *stricta* Hedley. Type.

,, 124. ,, *tumida* Hedley. Type.

,, 125. *Paraclathurella aditicola* Hedley. Type.

,, 126. ,, *clothonis* Hedley. Type.

,, 127. *Pseudorhaphitoma fairbanki* Nevill. Type.

,, 128. ,, ,, Apex.

,, 129. ,, ,, Detail of Sculpture.

,, 130. ,, *alticostata* Sowerby. Neptune Island, South Australia.

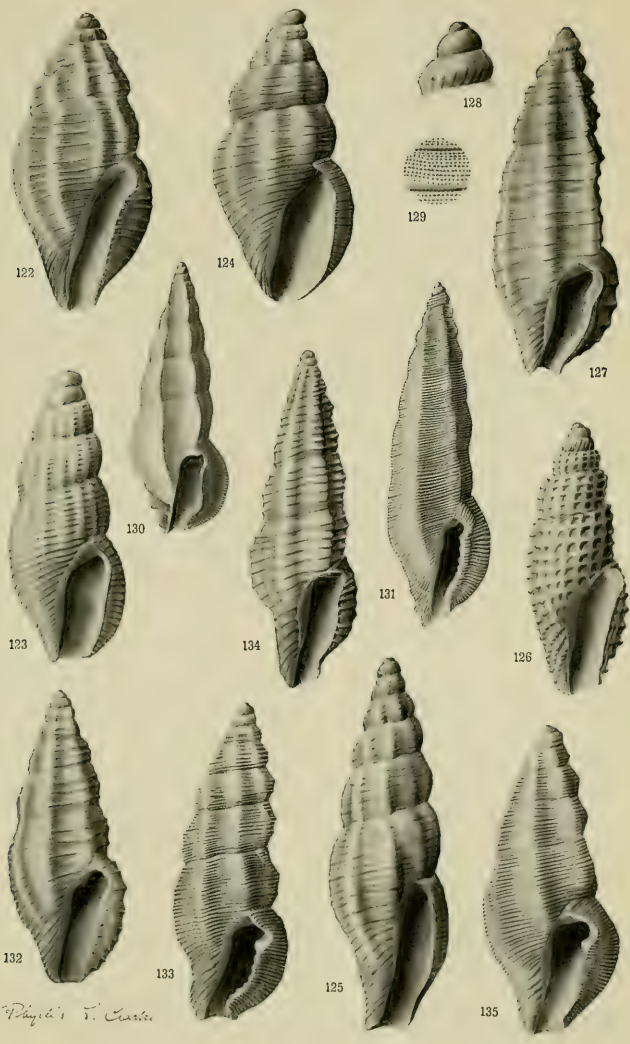
,, 131. ,, *axicula* Hedley. Type.

,, 132. ,, *bipyramidata* Hedley. Type.

,, 133. ,, *crudelis* Hedley. Type.

,, 134. ,, *darnleyi* Brazier. Darnley Island, Queensland.

,, 135. ,, *informis* Hedley. Type.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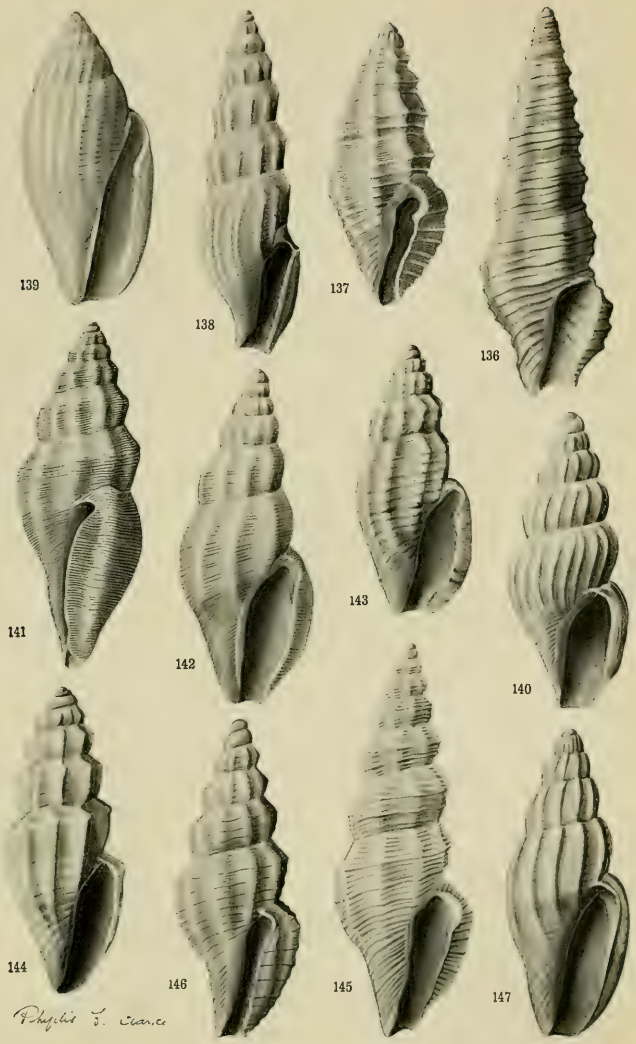
EXPLANATION OF PLATE LII.

Fig. 136. *Pseudorhaphitoma styracina* Hedley. Type.
,, 137. ,, *transitans* Hedley. Type.
,, 138. *Guraleus brazieri* Angas. Port Jackson.
,, 139. ,, *comptus* Adams and Angas. Port Jackson.
,, 140. ,, *costatus* Hedley. Type.
,, 141. ,, *fascinus* Hedley. Type.
, 142. ,, *fascinus* var. *stephenensis* Hedley. Type.
,, 143. ,, *flaccidus* Pritchard and Gatliff. Bass Straits.
,, 144. ,, *flavescens* Angas. Port Jackson.
,, 145. ,, *letourneuxianus* Crosse and Fischer. Port Jackson.
,, 146. ,, *morologus* Hedley. Type.
,, 147. ,, *nitidus* Hedley. Type.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EXPLANATION OF PLATE LIII.

Fig. 148. *Guraleus permutatus* Hedley. Type.

,, 149. ,, *pictus* Adams and Angas, var. *vincentinus* Crosse and Fischer. Port Stephens, N. S. Wales.

,, 150. ,, *pictus* var. *meredithæ* Tenison-Woods. Port Jackson.

,, 151. ,, *tasmanicus* Tenison-Woods. Port Jackson.

,, 152. ,, *tenuiliratus* Angas. Port Jackson.

,, 153. *Macteola anomala* Angas. Port Jackson.

,, 154. ,, ,, Apex.

,, 155. ,, ,, Detail of sculpture.

,, 156. ,, *segesta* Chenu, var. *cinctura* Hedley. Type.

,, 157. *Daphnella botanica* Hedley. Type.

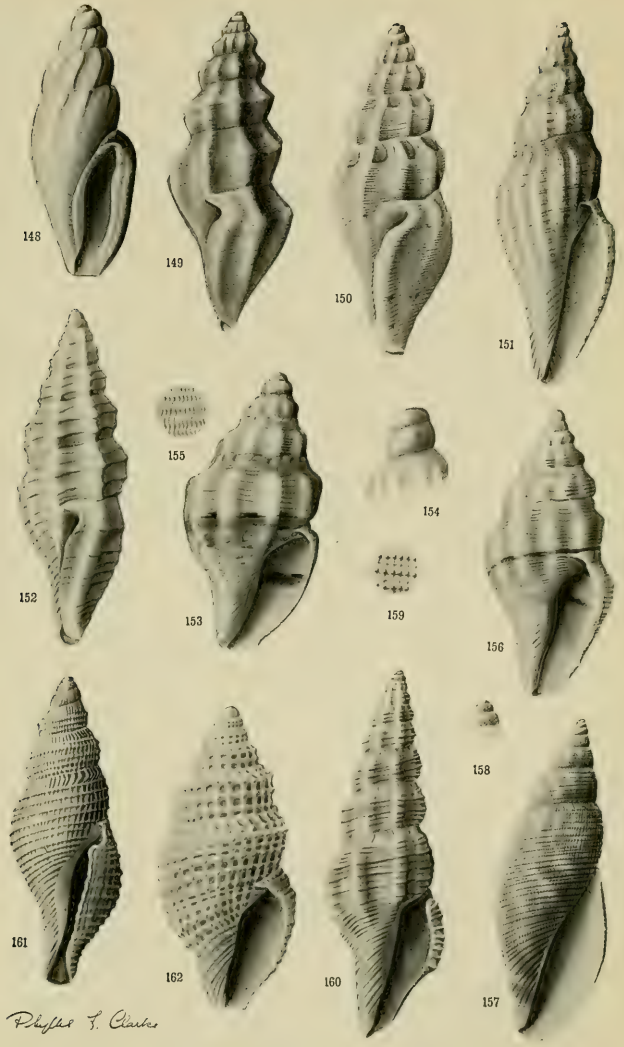
,, 158. ,, ,, Apex.

,, 159. ,, ,, Detail of sculpture.

,, 160. ,, *cestrum* Hedley. Type.

,, 161. ,, *cheverti* Hedley. Type.

,, 162. ,, *granata* Hedley. Type.

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EXPLANATION OF PLATE LIV.

Fig. 163. *Daphnella sigmastoma* Hedley. Type.

,, 164. ,, ,, Apex.

,, 165. *Veprecula scala* Hedley. Type.

,, 166. ,, *vacillata* Hedley. Type.

,, 167. ,, *vacillata* var. *paucicostata* Hedley. Type.

,, 168. *Hemidaphne cyclophora* Deshayes. Murray Island, Queensland.

,, 169. *Nepotilla tropicalis* Hedley. Type.

,, 170. *Asperdaphne albocincta* Angas. Port Jackson.

,, 171. ,, *amplecta* Hedley. Type.

,, 172. ,, ,, Apex.

,, 173. ,, *capricornea* Hedley. Type.

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EXPLANATION OF PLATE LV.

Fig. 174. *Asperdaphne compacta* Hedley. Type.

,, 175. ,, *vercoi* Sowerby. Type.

,, 176. ,, ,, Detail of sculpture.

,, 177. *Pseudodaphnella attenuata* Hedley. Type.

,, 178. ,, *barnardi* Brazier. Murray Island, Queensland.

,, 179. ,, *canistra* Hedley. Type.

,, 180. ,, *crasselirata* Hervier. Torres Straits.

,, 181. ,, *harenula* Hedley. Type.

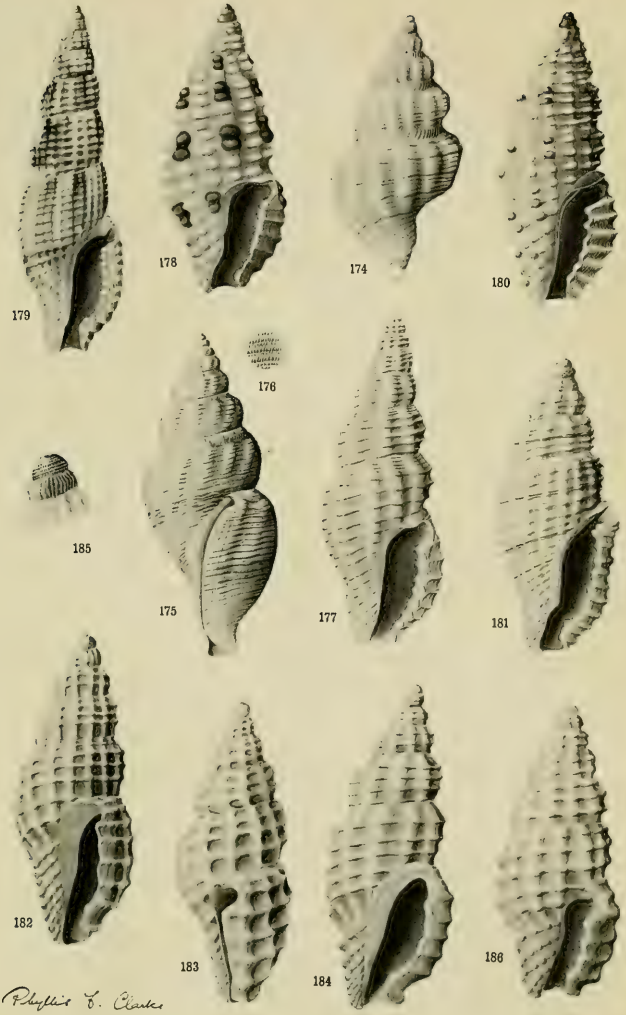
,, 182. ,, *mayana* Hedley. Type.

,, 183. *modesta* Angas. Port Jackson.

,, 184. ,, *oligoina* Hedley. Type.

,, 185. ,, *philippinensis* Reeve. Apex. Murray Island, Queensland.

,, 186. ,, *punicea* Hedley. Type.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EXPLANATION OF PLATE LVI.

Fig. 187. *Pseudodaphnella pustulata* Angas. Port Jackson.

,, 188. ,, *ramsayi* Brazier. Type. The crooked spire of this specimen is an individual deformity.

,, 189. ,, *retellaria* Hedley. Type.

,, 190. ,, *rufozonata* Angas. Port Jackson.

,, 191. ,, *stipata* Hedley. Type.

,, 192. ,, *tessellata* Hinds. Murray Island, Queensland.

,, 193. ,, ,, Apex.

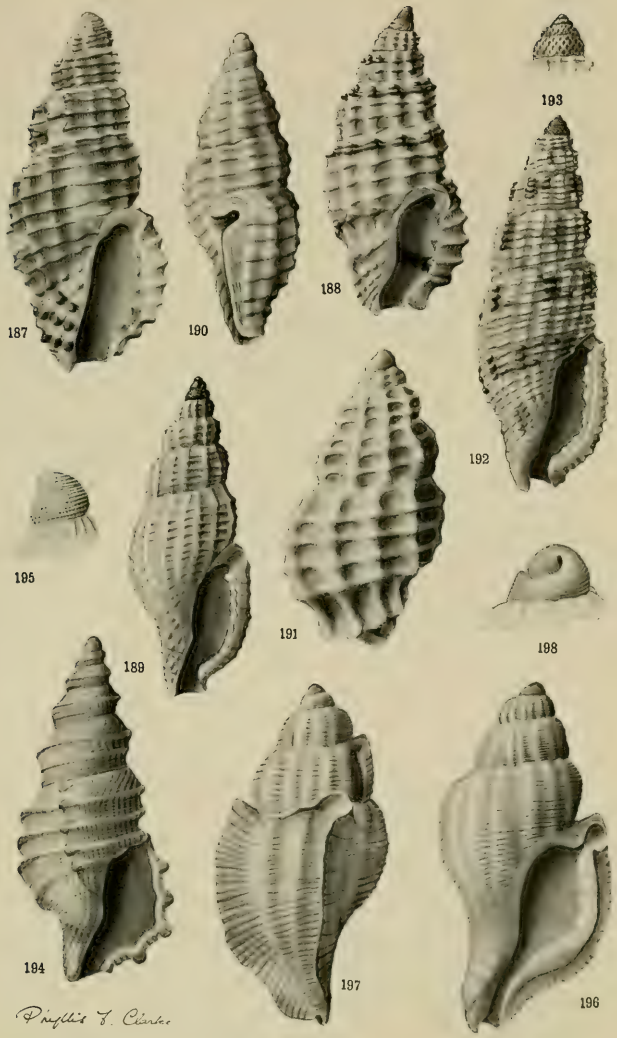
,, 194. *Eucyclotoma nobilis* Hedley. Type. Wreck Reef.

,, 195. ,, ,, Apex. Murray Island, Queensland.

,, 196. *Daphnellopsis murex* Hedley. Type.

,, 197. ,, ,,

,, 198. ,, ,, Apex.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